RAILROAD GAZETTE

FRIDAY, SEPTEMBER 22.

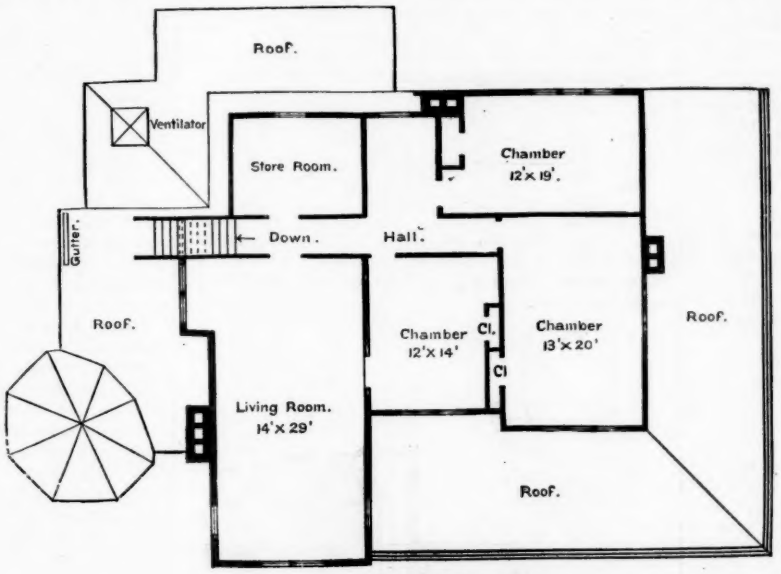
Suburban Passenger Station.

The colored plate published herewith represents a suburban passenger station, designed for the Pennsylvania Railroad by Wilson Brothers & Co., civil engineers and architects.

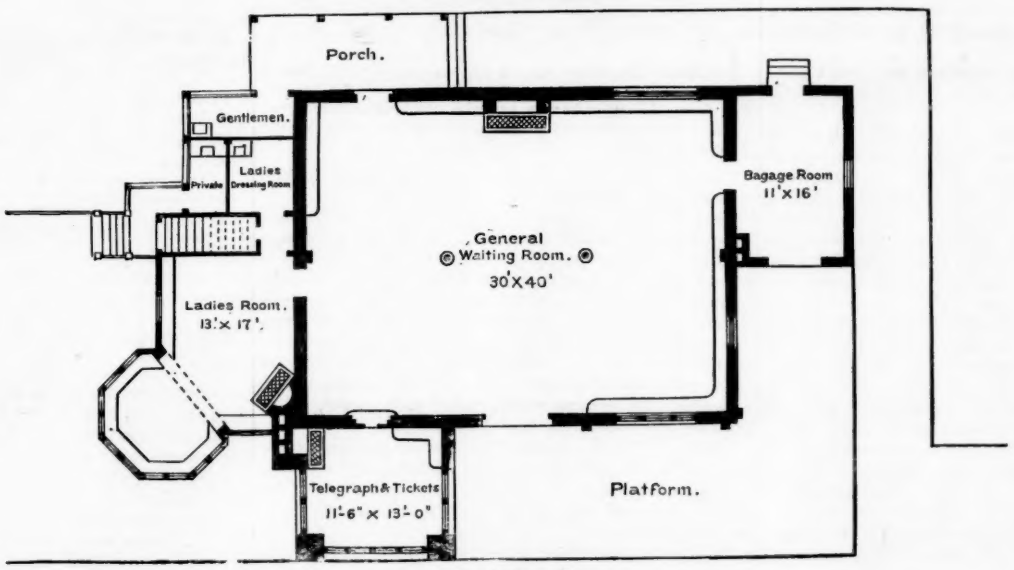
This building was designed to meet the requirements of a rural station near a large city. The passenger traffic is very large and constantly increasing, the locality being a favorite one for suburban residences of city men; and the class of people such as to demand a rather better style of accommodation than usual in country stations. The building is of brick in the first story and tile-hung above, with a roof of red tiles, a style well suited for the country where there is plenty of green about to complement the red.

The treatment is also in harmony with the style of modern suburban dwellings of the better class with which it is associated.

In arrangement, the waiting-rooms for gentlemen and ladies have been combined in one large room, and merely a toilet room reserved for ladies' private use. This disposition is found to be the best where the traffic is composed mainly of the better class of people. A small baggage room is provided, which is quite large enough for such a station. A porch at the rear gives accommodation for those arriving in carriages. Apartments for the agent's residence are provided in the second story. The plan shows the arrangement of the rooms.



Second Floor Plan.



First Floor Plan.

PLAN OF SUBURBAN PASSENGER STATION.

Designed for the Pennsylvania Railroad by WILSON BROS. & CO., *Civil Engineers and Architects, Philadelphia.*

Contributions.

Work at Altoona—Records and Blanks.

TO THE EDITOR OF THE RAILROAD GAZETTE:

Altoona affords every facility for study of car wheels, since the wheel foundry has the double office of manufacture and record of nearly all the car wheels used by the road.

Wheel Records.—The matter of wheel records needs more attention; a well kept record may be defined as follows:

It demands an accurate description of every failure under a classified list, such, for example, as we have quoted below. The mileage and class of service for each size of wheel should be given. Some check on the inspection which condemns and draws the wheel is positively necessary. This is best furnished by a second inspection of the condemned wheel before it is destroyed as scrap. No accuracy will be secured without this second inspection.

The wheel is affected as to quality by the material used, the kind of fuel, the temperature of casting, and the depth of the "chill" produced by contact of the molten iron with the iron chiller. A record of all these facts is therefore necessary—it is even necessary to trace the work of each individual molder, because a want of care or judgment on his part will quite certainly show itself in the mileage of the wheels.

Each wheel, therefore, is numbered; by its number it is reported when shipped, when used, when drawn, and finally, when the condemned wheel is sent to Altoona as scrap, its number enables the inspector of wheels to verify the report of its condition when condemned. When the wheel, therefore, is at last broken up, it leaves a complete record as to the facts of (1) mileage (furnished by transportation department); (2) failure in service; (3) physical condition after failure; (4) and all the facts of manufacture connected with those of service.

Causes of Failure.—In the Book of Instructions, issued by the Motive Power Department, failures are classified as follows:

"1. *Shelled out:* To be used when wheels become rough from circular pieces shelling out of the tread, leaving a rounded flat spot, deepest at the edge, with a raised centre.

"2. *Comby:* To be used when flat spots occur, composed of small holes in the tread. Care should be taken to distinguish between defects Nos. 1 and 2.

"3. *Seams:* To be used when wheels show seams or cracks running lengthwise of the tread.

"4. *Worn flange:* To be used when wheels show the flange worn thin, so as to make them unsafe, either from breakage, or tendency to mount the rail.

"5. *Worn flat:* To be used when wheels have worn on the tread, so as to produce a flat spot. Do not confuse this term with 'flat sliding.'

"6. *Worn hollow at flange:* To be used when wheels are worn hollow close to the flange. This defect is often associated with Nos. 4 and 5.

"7. *Worn hollow from flange:* To be used when wheels are worn hollow on the tread, away from the flange, the wheel looking as if the flange seldom ran against the rail. Care should be taken to distinguish between this defect and No. 6.

"8. *Burst:* To be used when wheels are cracked from the wheel fit outward by pressure from the axle. Length of crack should be stated.

"9. *Broken flange:* To be used when wheels are so broken; state length of piece broken off.

"10. *Broken rim:* To be used when wheels have the outside rim, opposite flange, broken off. State length of fracture.

"11. *Cracked Plate:* To be used when wheels show a crack in the plate. Give length and location of the same.

"12. *Cracked between plates outside:* To be used when double-plate wheels show a crack in the hollow, where single and double plates unite.

"13. *Cracked brackets:* To be used when wheels are so broken. State number of brackets cracked.

"14. *Broken in pieces:* To be used when wheels are so broken that at least a portion of both the tread and flange is removed. Full details must be given.

"16. *Flat sliding:* To be used when wheels show flat spots caused by undue application of the brakes.

"General terms, such as 'flat,' 'cracked,' 'rough,' 'worn out' 'good,' etc., in no case will be received as a sufficient report."

"In reporting wheels give the date of casting; also state in addition to the defects, if any, whether the wheels are good for 'Pass.' good for 'Frt.' or 'Scrap.'

"Wheels often show more than one of the defects given above. In such cases report all the defects, giving the one which condemns the wheel the first place on the report.

"A wheel showing a fracture of any kind should be condemned.

"A condemned wheel must be plainly marked with white lead or chalk at the defective point. This is especially necessary in case of cracks, when the cooling of the wheel may cause them to become imperceptible.

"Ship all wheels unfit for further service to Altoona machine shops; * * * forward invoices giving number, kind, diameter and date of casting of each wheel to 'Motive Power Office.'"

Axles.—(Extracts from instructions).—"In reporting axles the diameters of the journals must be given to the nearest sixty-fourth of an inch.

"Axles for passenger equipment cars and for engines must be numbered consecutively during the year commencing at Jan. 1. Inspectors in reporting axles will use the following terms to describe their condition:

"(1) Journal worn hollow; (2) journal worn taper; (3) journal worn small; (4) journal cut; (5) collar worn thin; (6) collar worn off; (7) bent; (8) journal broken; (9) broken inside of wheel fit."

Bearings (extracts).—"Bearings for use under passenger equipment cars and engines are all numbered, and when placed in service must be marked with the place and date

used, and the kind and number of car or engine under which placed.

"On being drawn the marking must be completed by stamping the place and date of removal. Thus:

479	P. 62
A C	H. C.
4, 16, 81.	5, 9, 82

"No. 479 is the bearing number marked at foundry; A C indicates shop where used; 4, 16, 81, date used; P, 6 2, kind and number of car under which placed; H C, place drawn, and 5, 9, 82, date drawn.

"Retain marked bearings continuously under the same car, if possible, until worn out. If necessary to remove a bearing, do not use it under another car, but return to Altoona machine shop to be weigbed and recorded."

Blank Forms.—The blanks for use in the Motive Power Department, and to a large extent for use by all departments, are kept by the general store. They are in charge, so to speak, of a committee on blanks, composed of members from different departments of the company's service, which alone has power to issue, or rather to authorize, any new form of blank.

Any officer or employé desiring to introduce a new form of blank must send a copy of the same, with a full statement of reasons why it is needed, and a description of its use. The committee then determines whether such a printed form is necessary.

This committee was formed some time since for the purpose of examining the blanks (and the methods of record and report so far as determined by their use), which had grown to a large body of papers and requirements. The result of its labors was a series of standard blanks and books of account, numbering, in all forms, varieties and duplications for various roads, about 879. Their general appearance is typographically neat and even tastefully clear, plain types being used in nearly every form, and the grouping of the type well arranged. So many minds contribute to every result on this road, that I am inclined to believe a good job printer with sound taste must have been one of the committee.

The Use of Blanks.—Blanks accomplish more than a mere uniformity of record; they form a body of requirements more efficacious than rules, and are, in fact, a sort of machinery for keeping rules in operation. Their use may be illustrated by what is required in case of an accident. These forms are marked in the corners "C. T." in small letters, and the number of the blank, as belonging to the Conducting Transportation department. "C. T." is a telegraphic report of accidents. It demands the name of station from which the report is sent, the section, train, engine, engineman's and conductor's names, place of accident, what caused it, the persons injured and to what extent, which track obstructed, which track clear, what crossing switches east and west of obstruction can be used, which track can be first opened, whether track is much damaged, how much force is wanted to clear obstructions, and a great variety of other information as to the cars, the engines and other trains.

It is evident that the mere existence of this blank is worth a hundred detailed rules for such cases. The conductor's report of accident is still more suggestive in this direction. He is required to fill up three blanks, sending one to General Superintendent, one to the Division Superintendent, and one to the Solicitor of the road for that district in which the accident has occurred, the reverse of the blank having a full list of solicitors and their residences. In case of ejectment of a passenger from a train, the conductor is required by the blank (which he must make out in duplicate for the General and the Division Superintendent) to give full information as to all facts of the case, which it would be difficult otherwise to obtain from him. There is also a blank for the surgeon's report of accident, which demands a minute description of the person injured and of his injuries. We mention these—and, indeed, the same may be said of many other facts—not because other roads have not the same forms and requirements, but in order to show the usefulness of blanks, and how they perfect and keep in working order the organization of a department or of a road. Probably no other road has made so exact and extensive use of them, and perhaps on no other road does the working of departments go on more smoothly and with less of nagging and scolding orders, intended to enforce neglected rules. In case of neglect it is simply necessary to notify the delinquent that no formal report has been received, or that he has failed to use a proper blank.

Papers on Painting.—No. 20.

BY CHARLES L. CONDIT.

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RUST.

The preservation of iron is a matter of such importance that the painter needs a good deal of knowledge about the causes of destruction which he, more than anyone else, is called upon to prevent.

Gold and platinum have no rust. Silver is not at all affected by the oxygen of the air, but is blackened by the sulphur gases (sulphureted hydrogen). The sulphur in eggs rusts, silver forming the black sulphide of silver, so difficult to remove from a silver spoon which has been much used in eating eggs. Copper is little affected by the oxygen of the air, but forms a green rust (carbonic acid copper, or, with acids, verdigris, acetic acid copper, and the like). The rust of copper prevents further rust; it forms, so to speak, a protective coat of color, usually green or bluish green. Copper rust is very poisonous.

Lead.—Lead attracts and unites with the oxygen of the air, and forms a thin black rust. This does not, however, increase unless the lead be heated or exposed to hot sunlight, when yellow and even red lead may be formed.

The true lead rust is white lead, and due to the action of carbonic acid in water or in the air. Soft rain waters have much more effect than hard waters, and water containing sewage matter and fatty acids, cider and sour milk still more. All lead rust is poisonous.

Tin is very little affected by oxygen of the air. It loses its lustre (as tin plate), but the acid gases of the air—especially the sulphur gases—have less effect upon it than upon silver. Red lead softens tin but does not rust it; although some tin may be changed into a white oxide of tin.

Tin plate is made by coating plate-iron (charcoal plate or coke plate) with molten tin. The protection to the iron is perfect, while the coating remains entire. When broken at any point, the iron rusts more rapidly for the presence of the tin.

Water is composed of two gases linked:

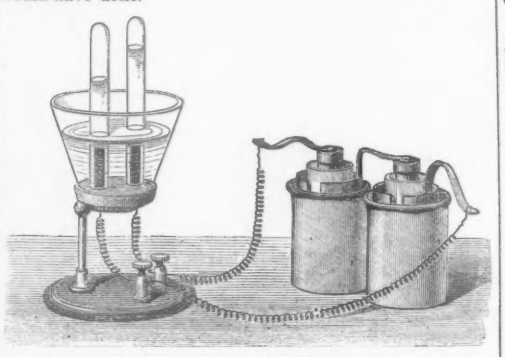
Water.

Hydrogen. Oxygen.

Water may be broken up into these gases by a galvanic battery. Tin and iron, or zinc and iron, form such a battery, if an acid such as carbonic acid be present.

Tin and iron and the carbonic acid in rain-water act as a battery and unlink the gases of the water.

The oxygen of the water unites with the iron, and, of course, rusts it more rapidly than the oxygen of the air would have done.



Production of odorous oxygen (the oxygen of the air has no odor) from water containing a little acid, by means of a battery. This form of oxygen is very powerful, and is called ozone ("to smell"). It is its odor which is perceived by the nose during the working of an ordinary electrical machine.

Zinc and iron act in the same way to water, but the unlinked oxygen attacks the zinc and not the iron.

The coating of rust which soon appears on bright tin plate exposed on roofs comes from the iron underneath through minute holes in the tin. If the tin plate be examined by a glass, holding the tin so as to reflect the light, a number of minute dents or holes will be discovered in its surface, through which the water reaches the iron and the rust runs out. These are more numerous on the lighter tin, and on the heavier tin fewer are probably open to the iron. They are the holes by which the paint must hold to the tin, but in case of new tin they are already filled with grease, which must come out before the linseed oil can go in.

This is the reason why a roof is better for exposure for a day or two before painting; the grease must either be evaporated, or it must be run out by the rain water and the rust. The oil can then get a direct hold upon the metal inside the holes.

This grease comes either from the top of the bath of tin into which the iron plate is dipped to "tin" it, and which is placed there to prevent the air from acting on the molten metal, or it may be rubbed in during the polishing.

Zinc and Galvanized Iron.—Zinc is slowly rusted by the oxygen of the air—more quickly by moist air, and becomes coated with a white oxide of zinc, which protects from further rusting.

Galvanized iron has the same disadvantage as tinned iron; it acts as a battery to unlink the oxygen of rain water. The oxygen, however, attacks the zinc, while on tinned iron it attacks and rusts the iron. It is better that the plates of corrugated iron should be galvanized after they are bent into waves, because this bending into shape is apt to crack the zinc. At least it is an advantage to get plates which have been regalvanized after bending, to fill up cracks.

Zinc of galvanized iron is quickly acted upon by sea air, and by all acid air. Soot is very destructive to it; soot, zinc and the carbonic acid of rain-water forming a battery like those described above.

Soot is a compound of ammonia; the urine and dung of animals contain acid and become ammonia. Therefore all these are destructive to zinc roofs, and cats especially should avoid such hunting-grounds. Lime-water and water from oak wood are also injurious to zinc.

The Chemistry of Iron Rust.—The rust of iron is always a linking together of the oxygen of the air with the iron. And yet pure dry air has little effect on dry iron. White vitriol (sulphuric acid) absorbs water very rapidly from air. In a bottle containing white vitriol a bright iron wire may be hung from the stopper (air-tight stopper) and will, one may say, never rust so long as it does not touch the acid. On the other hand, water without air does not rust iron. A piece of iron shut up in a sealed glass tube containing water whose air has been driven out by boiling, never rusts, if the conditions above are properly fulfilled. By rust red iron rust is intended—not simply a dulling of the lustre of bright iron. Bright tools may be kept for a long time in water in which carbonate of soda remains dissolved We may say, therefore:

(1). Air alone does not rust iron.

(2). Pure water without air does not rust iron.

(3.) Air and water alone rust iron slowly.

What is needed for rapid rusting? The presence of some acid. Carbonic acid does exceedingly well. Professor Calvert, of England, made a very long study of the rusting of iron. The following were the results of experiments lasting a considerable time:

Dry oxygen and iron	No rust.
Damp " " "	In three experiments only slightly rusted.
Dry carbonic acid and iron	No rust.
Damp " " "	A little white carbonate of iron.
Dry carbonic acid and oxygen and iron	No rust.
Damp carbonic acid and oxygen and iron	Very rapid rusting.
Dry and damp oxygen and ammonia and iron	No rust.

For rapid rusting, therefore, we need (1) air, (2) water, (3) carbonic or some other acid. The last is always present in the air, and rain brings down a good deal of it dissolved in the drops of rain-water.

Coal contains sulphur, and burned coal gives sulphur gas; coal cinders with water give some sulphuric acid. But the burning of coal especially gives large quantities of carbonic-acid gas. We have, then, on the line of railroads, and in cities a special cause of rusting in iron, due to the presence of carbonic acid from coal fires.

An examination, made at the Stevens' Institute some years ago, of rusted iron from two bridges on the Pennsylvania Railroad, showed in water from the iron, sulphuric, a trace of sulphurous, and a quantity of carbonic acid, besides chlorine; and th conclusion reached, after some experiments, was that the presence of carbonic, sulphuric and sulphurous acid was sufficient to cause corrosion, as, indeed, the over-head work of a bridge subject to smoke will show.

One of the over-head bridges, or, rather, over-head coverings (galvanized iron), of one of the New York elevated roads was found to need renewal twice in a few months.

Still, there is a more efficient agent for producing rust than even carbonic acid, to wit, rust itself. All rust (not having been roasted) contains water, especially all yellow rust. The rusting of iron seems to take place after this fashion:

Air.

From which iron takes oxygen and becomes:

Rust No. 1.—Iron and oxygen.

This process goes on until we have a combination like the following:

1. Iron and oxygen.
2. Iron and oxygen. Oxygen.

This is our common red rust, or, if there is much water in it, yellowish rust.

Now the iron underneath this rusty coat steals the last oxygen and becomes by the same process:

Red rust. { 1. Iron and oxygen. 2. Iron and oxygen. Oxygen.

Again we have red rust. To make up for this loss of oxygen, the upper crust has been taking more oxygen from the air. And so the process continues, because the first oxide of iron (iron and oxygen) has a great liking for oxygen, and because the red rust easily gives up some of its rust to its neighboring particles just below, while helping itself to more oxygen from the air.

This process of rusting (rust causing rust) is quite peculiar to iron. Other rusts, on zinc and lead for example, do not give up their oxygen to the metal underneath, but remain

Zinc and oxygen,
or
Lead and oxygen.

To this peculiarity iron rust owes its power of spreading under tin, zinc or paint used as a protection.

There is one kind of iron rust (iron and oxygen) which does not spread in this manner, namely, the magnetic, black oxide, which is found on Russia iron and is produced by the Barff process.

It is asserted by some that the black scale (iron and oxygen) found on wrought and cast iron, falls off because of the formation of other rust under it. A distinction must, however, be made between this scale and the hard skin of sand, etc., found upon cast iron. If this be painted over immediately, or dipped into hot oil, it retains its hold, while the scale on wrought iron continues to fall off, after being covered with paint.

The whole difficulty in protecting iron by paint lies in the fact that no covering of paint of any kind will protect the iron from rusting by the action of its own rust, either red rust or common black rust. There is no paint which will "kill" the rust. Paint can only water-proof iron.

* The hydrogen may join with the nitrogen of the air to form ammonia, formed with iron rust.

Cox's Railroad Crossing.

Mr. Henry F. Cox, the Superintendent of Signals on the Pennsylvania Railroad, has patented an arrangement of tracks, switches and interlocking apparatus, which is intended to make it impossible for one train to collide with another at a grade or level crossing.

Figs. 1 and 2 are plans of one single track crossing another.

Before reaching the crossing each track is connected by switches 1, 2, 3 and 4, with curved tracks or turn-outs *D*, *F*, *E* and *G*. These switches are so connected by rods x and bell-cranks x^1, that they may all be worked by a single switch lever x^2, or, if desired, a system of interlocking levers may be employed. The lever or levers for working them are so arranged that when the switches for one line are connected with its rails, those on the other are connected with the turn-out curves. Thus in fig. 1 the switches are set for the passage of a train on the line *B B*. The switches 1 and 3 are then set so as to connect the rails *C* and *C'* with the curves *D* and *E*, and therefore a train approaching the crossing in the direction of the darts *C'* or *C''* would run upon the curved tracks *D* and *F*. In fig. 2 the switches are set for the passage of a train on the tracks *C' C''*. The switches 2 and 4 are then set for the turn-out curves *G* and *F*.

Fig. 3 shows the arrangement for a crossing of two double-track lines.

In his specification Mr. Cox says: "I am aware that a turn-out switch has been employed in connection with draw-bridges, and therefore I do not broadly claim such a construction; but what I claim as new, is: In combination with a railroad crossing, having the main tracks *B* and *C* and the turn-out switches *D*, *E*, *F* and *G*, actuating mechanism, substantially as described, by means of which the switches are moved in unison to protect the track which is open for the passage of trains."

A Defence of the Central Pacific by its President.

The *Argonaut*, a weekly paper published in San Francisco, having published a statement of the grievances of the California public against the Central Pacific, the President of the company, Ex-Gov. Leland Stanford, published a reply n the same columns, very much of which is of general application. It is given in full below:

SAN FRANCISCO, Aug. 22, 1882.

HON. FRANK M. PIXLEY, *Editor Argonaut*—Dear Sir: I desire to thank you for your open letter of the 14th inst.; and I embrace the opportunity which an answer will afford, to correct certain erroneous impressions concerning railroad matters in this state which exist in the minds of many people, and also by a brief statement of fact to remove possible prejudice. The spirit of candid inquiry which your letter evinces leads me to hope that my response will meet with candid, fair, and just consideration.

MONOPOLY.

The first allegation:

"That the railroad transportation facilities of the state of California constitute an oppressive monopoly."

Has no foundation in fact. It so happens that the principal volume of the railroad business of California is subject to competition by water transportation, which a glance at the map will show to be true. Further, the only real monopoly that the railroads can have is to the extent that they are able to do business cheaper and better for their patrons than can otherwise be done, and to that extent the monopoly, if monopoly it is, is beneficent in character. In this connection I desire to state that, aside from our patent and tariff laws, the only monopolies possible in the United States are to the extent that they are beneficent. Before the formation of our general corporation laws, the only corporations possible were those created by special act, and they were from that fact necessarily monopolies, enjoying privileges which others could not possess. But our corporation laws are antagonistic to such privileges, and provide for the prosecution of every character of legitimate business through the principle of co-operation of capital and numbers. Under these laws no enterprise, however great, but can find the requisite numbers and the requisite capital to be associated in its prosecution, if it offers sufficient inducement and reward, and this insures all needful regulative competition. Excessive profit arising upon any enterprise is the strongest attractive force to capital to engage in competitive undertakings. The aggregate capital of the many is thus made to balance the advantages of large accumulations in the hands of the few. Our corporation laws offer no special privileges, the state grants nothing through them, and acts only for the purpose of aiding the natural right of association. It is upon this natural right of association that society itself is organized, and the legal association of capital and numbers is only the exercise of the same natural right that a man has to call in his neighbor to assist him in rolling a log or raising his barn. It is the foundation and security of our republican institutions, for so long as the people can associate themselves together with the right to express their ideas, and organize to give them force, it cannot be otherwise than that the majority must rule. The assumption, therefore, that large corporations may be dangerous is to assume that the people are incapable of self-government, and that the majority will make laws to oppress themselves for the benefit of a minority. The establishment of a government founded in the doctrine that the rights to life and liberty, the pursuit of happiness, and the acquisition and enjoyment of property are inalienable, is the grandest achievement of modern civilization. The great underlying principle of our government is the protection of the rights of each individual; and in securing the rights of the individual the rights of the many cannot be otherwise than secured.

RATES.

The second allegation:

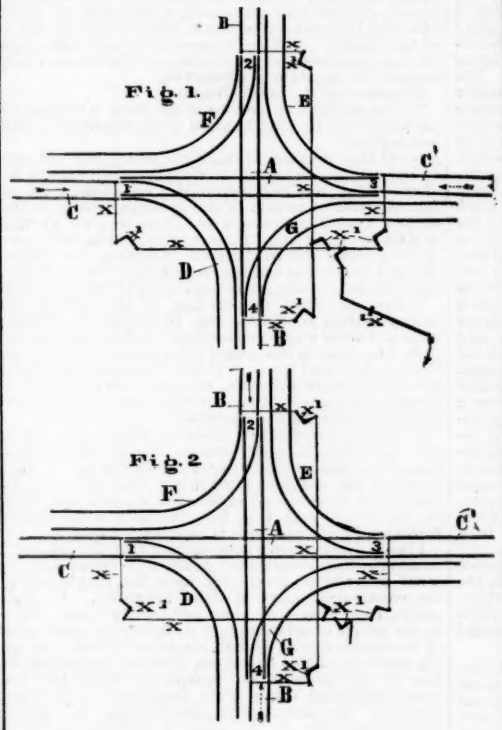
"That the rates of transportation charged by the railroads of California are exorbitant and excessive to such a degree as to arrest the growth of the commonwealth, and to discourage and stifle production:"

And the third:

"That the principle of regulating freight tariffs upon the basis of what the article transported will bear rather than by the standard of the cost to the carrier of the service rendered, by means of freight classification, is erroneous, unjustifiable, and discriminating."

Will be considered together.

In answer to the first I might content myself by pointing to the history of the state since the period when railroad transportation began. The law under which most of the railroad corporations of this state were organized fixed the maximum rate for freight at 15 cents per ton per mile, for all classes. Therefore, under the law, a possible average of 15 cents per ton per mile might have been charged, but the actual average rate obtained by the Central Pacific Railroad during the year 1881 was less than 2.2 cents per ton per mile, or a little less than one-seventh of the possible average obtainable under the law, and this without compulsion other than that demanded or suggested by the laws of business. These laws are the only certain, just and legitimate regulators, and under them the greater part of the products of the country are moved at rates below the average cost of movement. Wheat will probably be moved from San Francisco to New Orleans at the rate of about one-half cent per ton per mile, or at one-fifth of the average charge for the movement of freight on the Central Pacific Railroad during 1881; and this because of three controlling principles of business law coming in to affect it, viz.: Competition, the cost of the commodity at the place of its destination, and its own actual value in this market. The natural principles of business, which have been found sufficient to regulate all other interests without special regulative enactment, are equally inherent in the business of transportation, and this self-regulating process is clearly illustrated by the facts I have above cited. The railroad finds its reward for the minimum rates of freight in the general development of the country and the stimulus given to production, and after paying the direct expenses consequent upon the movement of these minimum freights, there may be a small balance still to go toward paying the fixed expenses and the general cost of maintenance. And to that extent these low-priced commodities contribute a share of support toward a means of



COX'S RAILROAD CROSSING.

transportation that is of general benefit to every commodity.

This naturally brings me to a consideration of the third question, and explains one of the great reasons for classification, which is to make the burdens of transportation proportioned to values; thus each article, as nearly as possible, pays an equal percentage on its own value. To fully illustrate the value to staple articles of production of this principle of classification, suppose four persons desiring to construct a means of transportation from a common point to a common point, to be possessed of commodities related to each other in value as iron, copper, silver and gold. Now let it be distinctly understood that the means of transportation is common, and that the value of these articles is to reside in their destination. The transportation of iron could not confer as much value upon that commodity as the transportation of copper. Again, the transportation of copper could not confer as much value upon the article transported as the transportation of silver, and this again as the transportation of gold. It follows, therefore, that the value of the service rendered by the transportation of gold, the most costly article used in this illustration, will be as much greater than the transportation of iron as the difference in the value of the two articles brought into comparison at their market point. To charge the iron with a rate of transportation equal to that charged the gold, when the value of the service in transporting the gold is many thousand times greater than that rendered in transporting the iron, would be an unjust discrimination against the iron and in favor of the gold. The principle, then, carried into practical commerce, is that a high rate is placed upon costly articles, and a low rate upon cheap articles, for mutual benefit and a just distribution of burdens. Of course, other considerations, almost as various as the character of the goods transported, enter into this question of classification, such as bulk and volume, liability to damage, convenience of handling, quantity shipped, etc.

DISCRIMINATIONS.

As to the further allegation:

"That, in practice, the railroads of California discriminate arbitrarily and unjustly between individual shippers and between shipping points, showing favoritism to individuals and localities, to the obvious injury of the persons and places discriminated against."

I first deny that this is the practice, and further state that no rule of the company has ever existed which permitted or tolerated such a practice. Every difference in rate which the rules of the company permits arises out of the necessities of business, and is generally caused by competition. And this brings me directly to the seventh allegation:

"That freights are carried for longer distances—as, for instance, to terminal points—for less, or at the same rates charged for shorter distances."

Which we admit and justify by a single illustration. Take the wheat of the country, with San Francisco, Sacramento, Stockton, Red Bluffs, Bakersfield and Los Angeles as shipping points, and New Orleans as the objective point. And here come in the three factors which limit and fix the price that the railroad company shall charge for transportation. The first is development, which applies most strongly in the case of the most remote place, Red Bluffs; second, the value of the commodity at New Orleans, or its ultimate point of destination, say Liverpool; and last, competition. San Francisco is the chief competitive point, with 481 miles of transportation more than from Los Angeles. Sacramento, 50 miles further from the point of destination than Stockton, has as good facilities for reaching San Francisco, the great competitive point, as Stockton has, and will not pay to the carrier any greater price than the latter pays, for the reason that the competing advantages are about equal. At Red Bluffs the question of development appears more strongly than at either of the other points, and yet feels the influence of both of the other factors. The converse of this proposition is also true as relates to the import commerce to be carried by the Southern Pacific Railroad. The export commerce which will find its outlet at the Gulf ports will be supplemented by an import commerce, and this must necessarily, by the same law of competition, be carried to San Francisco at as low rates as will be charged for like carriage to Los Angeles. Now, the railroad practically has but little voice in the matter, outside of those considerations which fix the price that it shall receive. And here let me say that whenever the railroad accepts less than the maximum allowed by law, it is because of considerations or circumstances that it cannot control, but which in themselves fix the price which becomes an established rate. This fact should receive due consideration. Now, it will be seen that, controlled by these circumstances, an equal mileage theory would not apply at all, and nothing can regulate it excepting business laws, unless you deny to the shipper the right of competition, and regulate him in his routes and prices. An attempt to regulate the carrier without regulating the shipper will always be a failure; and again I may say that the only regulation possible is such as business principles or the laws of business permit. When the railroad accepts less for the longer than for the shorter distance, it is because circumstances compel it, and not from choice. Railroads are no more desirous of working for nothing than other enterprises or interests; and it would be as reasonable to suppose that they would voluntarily carry for the longer distance at the same or less rate than for the shorter, when they could obtain more, as to suppose that the laborer would work a day and a half for the same price that he would for one day. The people are not charged more for the shorter distance; but the railroads are compelled to take less for the longer distance, for certain causes over which they have no control, viz., competition, or the relative values of the commodities moved.

"*Fifth*—That merchants and manufacturers are, by force of existing conditions, coerced to enter into contracts to ship all goods imported by them by rail, to their disadvantage, and to serious loss and injury to their business."

This allegation would seem to be suggested by individuals who fail to have an advantage over their neighbors, which perhaps they think themselves justly entitled to. There is an open or general tariff rate which all shippers may avail themselves of, without any discrimination. All may also avail themselves of the contract rate, the smallest as well as the largest shipper. Whether they enter into this contract or not is a matter of individual interest and opinion entirely, and, therefore, is not properly a matter of public concern. The shipper avails himself of the open or contract rate as to him seems best, and this contract system is available to the smallest as well as the largest shipper. No one enters into this contract unless he deems it to his individual advantage as against the general tariff rates.

In answer to the sixth allegation:

"That the coercion alleged to be practiced by the railroads, as set forth in the above count, prevents competition by the ocean, raises the aggregate cost of transportation, entails additional cost upon all articles imported, and forces entire reliance upon overland railroad lines, to the injury of the commerce of this state."

I can only say that before the construction of the overland railroads, the lowest freight by the Isthmus was about one hundred dollars per ton; now it is about twenty dollars. During the past year, freights on wheat by Cape Horn ruled a little over seventeen dollars per ton. The opening of the Southern Pacific brought that price down immediately to about ten dollars, and had that rate prevailed during the past year alone, it would have saved to the farmers of this state about seven million dollars on the cost of transporting that single article, and I predict here that the former rates around Cape Horn will never be restored. And this because the railroad has come in as a competitor for the business. Thus it appears the allegation that the contract freight system, as practiced by the railroads, prevents competition by the ocean, or raises the aggregate cost of transportation, or entails additional cost to the consumer on articles imported, or forces sole reliance upon overland railroad lines, has no foundation in fact.

STATE AND MUNICIPAL AID.

Allegation seven has already been answered.

"*Eighth*.—That hostility to the railroad as a basis for political action is justified by reason of the facts, to wit: That the construction of the railroad system of the state was encouraged and aided by county, state, and national subsidies, and that in the processes of their construction the right of eminent domain was exercised in the condemnation of the right of way, and other important matters. That all these concessions and privileges placed you and your associates in the attitude of trustees for the public, and that it is unreasonable and unconscionable that you should be able to earn profits amounting, by your own exhibits, to something like nine millions a year, and which are necessarily drawn from the industries and commerce of this state."

This allegation embraces much of error that is widespread throughout this state, and the entire United States as well, and it seems to me that a brief recital of the facts will remove the impression that exists. The aid received in the

construction of the Central Pacific Railroad was, in round numbers, a loan of twenty-five millions of dollars in the bonds of the United States. This was not a gift, and therefore not a subsidy, and for it the government has taken ample security; and all it is out in money is only the difference between the interest paid on these bonds and the value of the services rendered by the railroad company. The government gave, also, some of its land, of but little value at the time, and, I am sorry to say, of much less value now than is generally supposed. By this the government secured the construction of the road, and it has never been disappointed in a single expectation connected with it. As appears by a report of a United States Senate Committee, taking the average expenses west of the Missouri River from 1840 up to the completion of the roads, as against what has been paid since for much better service, the government has saved over three million dollars per annum, assuming that the interest it has paid on the bonds loaned to the companies should turn out an entire loss. Other advantages might be enumerated; but the public mind will readily appreciate them without a detailed statement here. The only aid extended by the state of California to the construction of the road was by virtue of a contract between the company and the state, in which the state promised to pay the interest on $1,500,000 bonds of the company, the latter to pay the principal of those bonds at maturity. The value of the service which has been rendered under this contract, added to the revenue derived from taxation due to the increase of taxable property created by the construction of the road, produces a sum greatly in excess of the amount of interest paid on the bonds already mentioned. The county of San Francisco, in the way of compromise, gave 400 bonds of $1,000 each, at that time of a value of about $750 each, instead of subscribing for $600,000 stock of the company, and giving for it an equal amount of the bonds of the county, as it was entitled. The compromise was made at its own solicitation; and if it was a bad bargain, it was its own fault. The county of Sacramento subscribed for $300,000 of the company's stock, and gave its bonds for an equal amount. The county of Placer subscribed for $200,000 stock of the company, and gave its bonds for an equal amount. Both of these counties afterward sold their stock for more than their bonds were worth at the time of their subscription. This embraces the entire amount of aid—national, state, and county—which was contributed toward the construction of the Central Pacific Railroad; and when the increase of taxable property, affording additional revenue to state and county treasuries, and the development of the resources of the state consequent upon the construction of these railroad lines, come to be considered, it seems to me that neither the state nor counties have reason to regret their contributions. If the national government, the state, or counties desired other benefits than those naturally derived from the construction of the road, they ought to have so stated in their contracts; and they are not now entitled to anything beyond the specific performance of the contracts. To base the right of regulation upon the claim that, in the construction of the road, national, state, and county aid was extended, would be to claim the right to neutralize such aid, and to inflict a penalty of continued and indefinite loss for having accepted such aid.

Legally and equitably we sustain the same relation to the public as all other railroads, subject to equal laws, and to the fulfillment of every contract. I have before stated that our corporate laws are merely in aid of the natural right of association. The right of eminent domain is not exercised by the railroad company, and in fact can only be exercised by the state and for the benefit of the public, and it is only because the state deems railroad construction as of such eminently beneficial character to the public that it is exercised, and in order that the railroad may have the right of way to build its road. The right of eminent domain is not vested in the railroad company. The state can not divest itself of it, and it cannot exercise it for the benefit of the railroad company. It can only be exercised on behalf of the public, and for the public benefit. The manner of its exercise proves this. The state, exercising the right of eminent domain, condemns the property to be taken; but since the instrumentality of transportation is a private interest, the full value of the property taken must be paid for by it to the owner from whom it is taken, before it can be used. What is, therefore, termed the exercise of the right of eminent domain does not form a basis of right to regulate the business of railroads, any more than it would confer the right to regulate the earnings of property belonging to any other kind of corporation. Railroad corporations are not created by the state any more than any other corporations; any more than partnerships are created. It simply points out how they may be created, and it is then the work of individuals to create the corporation or the partnership, and the property of this corporation or partnership is to be contributed primarily by individuals, and the ownership of the property is in individual citizens, and it should be held for their or their successors' benefit. An injury to the property of the association of these individuals, under the name of a corporation, is as serious to them as though they held the property in an ordinary partnership, or as tenants in common. The corporation is one thing, the property of the corporation is another, the labor of the corporators is still another, and it is upon the false theory that the state created the first, that it has parted with something of value, that the assumption is based of the right to regulate the labor and the property of the individual incorporators and stockholders, for these two latter are the main things that an attempt is made to regulate. And to take away from these their value is to confiscate the labor of individuals; to confiscate property; to blot out individual rights and the great associate principle upon which rests our political, social, and business prosperity and security. But I am sorry to say that the supposition that our net profits are $9,000,000 per annum is a great mistake. A more careful scrutiny of our annual reports would reveal the facts. From the apparent net earnings there needs to be deducted the various amounts set aside for sinking funds under the law, legal expenses, taxes, interest, etc., in order to obtain the actual net available for dividends, so that, in fact, since the completion of the road we have been able to pay in dividends an amount averaging only 4 per cent. per annum. The greatest net earned in any one year was in 1875, when it reached nearly 8 per cent. upon the capital stock issued, or, in exact figures, $4,303,050.93. The next largest year was 1881, when the total was $4,281,100.73. Contrast this showing with that made for the Pennsylvania Railroad, for the same year. (see *Poor's Manual*, page 272). The Central Pacific's available revenue from 2,707 miles was $4,281,-100.73. That of the Pennsylvania from 1,172½ miles was $9,828,853.48.

CONFLICT BETWEEN CARRIERS AND PRODUCERS.

In answer to the ninth allegation:

"That an irreconcilable conflict exists between transportation and production,"

Permit me to say that it is entirely without foundation in reason or in fact. The two are to a large degree mutually dependent, and especially is transportation dependent upon production.

Without production the carrier would have nothing to transport, and, on the other hand, production is dependent upon transportation, because without transportation the surplus could not reach its market, and the inter-dependence of the relation between these two interests is proven when it is remembered that the greater volume of the staple products of the country is moved to its destination and market at rates below the average cost of transportation. The relative rights and interests of transportation and production are compromised and adjusted to each other by means of classification of freights, already discussed in another part of this answer. It is clear, however, that the higher the maximum, the lower the possible minimum. For instance, the average cost of movement being two cents per ton per mile, a ton of silk or other luxuries moved at the maximum rate of fifteen cents per ton per mile would enable the company to move thirteen tons of wheat at one cent per ton per mile and yet maintain the necessary average. There is scarcely anything that the farmer buys at the store that would be sold to him any cheaper if a reduction of 25 per cent. were made. For instance, suppose that the freight from San Francisco to some other point is four dollars per ton; a reduction of 25 per cent. would be equal to only one-half mill per pound, a reduction so inconsiderable that it would not be taken into account by the vendor or the vendee. But the increase of 25 per cent., especially for long distances, on the products of the farmer, might determine the question of production.

In answer to the tenth allegation:

"That material reductions in the rates of freight and fare are demanded by consideration of the interests of both labor and capital,"

I assert that the rates in this state, every fair circumstance considered, are as low as the rates upon railroads in any part of the world; and to illustrate this, on selecting for comparison the rates of twenty of the principal roads of the state of New York, it was found that there was an average rate of 2.64 cents per mile for passengers, while that prevailing on the Central Pacific Railroad, including the higher rates charged in Nevada and the territories of Utah, Arizona and New Mexico, is only an average of 2.47 cents per mile.

"*Eleventh*—That the opening of the railroad route of transportation to Gulf ports, by which the wheat, wool, wine and other staple productions of this state will be transported to ships on the Atlantic seaboard, will drive from the Pacific ocean and the port of San Francisco the import commerce now carried thereon, and place the producers of California at the mercy of monopolized lines of transportation for the carrying of their products."

It seems to me that the above is fully answered by the fact that the ocean must always remain an open route, by Cape Horn and by the Isthmus. There will also be additional overland railroad lines through our own country, through the British possessions and through Mexico, and these will be regulators that will keep the rates on the Central and Southern Pacific railroads always within bounds.

I think I have shown conclusively that the opening of the Southern transcontinental route will encourage development and confer prosperity upon the people who support the commercial mart of San Francisco. In that prosperity San Francisco must necessarily share. The saving to the people of seven million dollars per annum on the cost of transportation on a single staple product of the supporting territory of San Francisco, alone affords ample illustration of the extent of the prosperity which the Southern transcontinental route must necessarily confer upon the people of this state. The experience of the past affords ample guarantee to the great metropolis of the Pacific coast against injury by reason of the construction of transcontinental railroad lines which have that metropolis for their Pacific Ocean terminus. The vast increase in the volume of commerce passing through the Golden Gate by reason of the development consequent upon construction of the railroad system of the state and the transcontinental lines now reaching here, points to the inevitable conclusion that neither the import nor the export commerce of the port of San Francisco will be diminished, but, on the contrary, will be greatly enhanced and augmented.

Steam transportation by land is confined to fixed lines, involving the construction of railways, requiring large investments of capital; but by way of the ocean San Francisco sustains cheap commercial relations with every part of the world. But this fact would not make her a great commercial emporium without lines of communication with the interior. The existence of a harbor is nothing in itself, but if that harbor has lines of transportation by rail and river converging into it, then converging lines of commerce by ocean convert it into a focal centre of exchange and distribution. The harbor of San Diego is sufficiently safe and commodious to meet the demands of the commerce of Liverpool, but the reason why a great commercial city exists on the harbor of San Francisco, and not on the harbor of San Diego, is because the former has enjoyed the advantages of communication by river and rail with the interior. San Francisco is connected by ocean with every port on the globe that is visited for commercial purposes. Her commercial lines radiate from the Golden Gate like the rays of a sun. A corresponding radiation of lines of communication connecting her harbor with the interior, however great their number, can only augment her commercial greatness, and make her harbor one of the most important ports of the world, both for import and export commerce.

In conclusion, permit me to say that every candid, unprejudiced, and argumentative consideration of these important questions only brings into stronger relief the inter-dependence of transportation with every other material interest of the commonwealth. It is so interwoven with every element of progress and prosperity, that to inflict upon it an injury is to strike a blow equally at every other material and commercial interest. You say your questions are formulated from speeches and documents of a political campaign. If party methods take the direction of promising reductions in the rates of transportation, and parties are to challenge each other to a rivalry in bids of this character, then the party that ansicipates the ultimate logic of such a contest, and promises that transportation under its administration shall cost nothing, will at once surpass its competitors in the breadth of its conceptions and the splendor of its appeal to the spirit of confiscation.

I entertain, however, no apprehension of such a result. The enlightened sense of justice, inseparable from the civilization of the age in which our people live, may be depended upon to promote enterprise, encourage development, and maintain unimpaired the rights of all citizens.

The Old and New Pennsylvania Railroad Officers.

The following sketches of the railroad service of Mr. Cassatt, the retiring Vice-President of the Pennsylvania Railroad Company, and of the officers whose appointment or promotion follows upon his retirement, are taken from the Philadelphia *Railway World*:

The retiring Vice-President, Mr. A. J. Cassatt, was born in Pittsburgh, Pa., in 1840. His father, Robert Cassatt, is descended from a family of French origin, who emigrated to this country at an early day, settled in Bergen County, New Jersey, and ultimately removed to York County, Pa., where they located themselves in that portion known as Adams county. His mother was Catherine Johnston, daughter of Alexander Johnston, Jr., of the Chester county family of that name. He commenced his education in Pittsburgh, Pa., where he early acquired a remarkable facility in speaking the French and German languages. While still quite young he accompanied his parents to Europe, where his studies were continued in the best institutions of learning. Upon his return to the United States he entered the Rensselaer Polytechnic Institute, at Troy, N. Y., where he graduated with great credit in 1859, and, going South, was for a short time employed on one of the Georgia railroads. The opening of the rebellion compelled him to return North. Soon after this an opportunity presented itself for him to enter the employ of the Pennsylvania Railroad as rodman in the office of the Resident Engineer at Altoona. His abilities were quickly noted by the able men who were at the head of the company, and in 1863 he was made assistant engineer of the corps engaged in the construction of the Connecting Railroad around this city. The next year he was transferred to the Philadelphia & Erie Branch, and made Resident Engineer of the Middle Division of that line. Soon afterward he was made Superintendent of this line, and in 1866 became Superintendent of its motive power and machinery. Nov. 16, 1867, he was transferred to the main line and made Superintendent of the motive power and machinery of the Pennsylvania Railroad, with headquarters at Altoona, which position he held for two years and a half. On April 1, 1870, he was made General Superintendent of the Pennsylvania Railroad. On Dec. 1, 1871, the lease of the United Railroads of New Jersey took effect, and Mr. Cassatt was called to Philadelphia to assume the duties of General Manager of all the Pennsylvania Railroad Company's lines east of Pittsburgh and Erie. On July 1, 1874, he was elected Third Vice-President of the company, and on July 1, 1880, First Vice-President. Mr. Cassatt married Miss Lois Buchanan, daughter of Rev. Mr. Buchanan, of Oxford, Philadelphia county, and niece of the late President James Buchanan.

Mr. James McC. Creighton, the retiring General Freight Agent, was born in Pittsburgh in 1833, and was educated in that city. A portion of his early life was spent in the transportation business on the Ohio River. In 1852 he entered the service at Pittsburgh of Leech & Co., who were then operating the Pennsylvania Canal west of the Allegheny Mountains. Subsequently he became a clerk in the office of Clarke & Thaw, then western agents of the Pennsylvania Railroad Company at Pittsburgh. At a later period he was promoted to the position of Assistant Superintendent of the Pittsburgh transfer station. On Jan. 1, 1865, he was appointed General Agent in charge of the Pennsylvania Railroad Company's interest at Pittsburgh. He continued to perform the onerous duties of this important position with marked success and ability until Feb. 15, 1874, when he was appointed Superintendent of the West Pennsylvania Division, with his office at Blairsville. On Jan. 1, 1879, he was appointed Manager of the Empire Line, and installed in its central office, in Philadelphia. On Dec. 10, 1879, shortly after the death of Mr. Kingston, he was appointed Assistant to the Third Vice-President of the Pennsylvania Railroad Company, to perform such duties in connection with the freight department as might be assigned to him. On March 24, 1880, he was appointed General Freight Agent of the Pennsylvania Railroad Company, and at once entered upon the discharge of the duties of that position. His training and antecedents have furnished unusually good opportunities for acquiring a thorough knowledge of the complicated freight movements of the country, and he has given many proofs of administrative ability.

Mr. Edmund Smith, who continues to discharge the duties which have been peculiar to his office as Second Vice-President, including a general supervision of the accounting and treasury departments, entered the service of the company in June, 1847, being at that time connected with the engineer's department. He first served as rodman, then assistant engineer, and was subsequently appointed Principal Engineer. He was first employed on the Eastern and afterwards on the Western Division in the surveys, location and construction of the road. In January, 1855, he was elected by a board of directors to the position of Secretary, which he held until May 1, 1869. Under the reorganization of that date he was elected Third Vice-President. On the reorganization of the company in 1871 Mr. Smith took the position of Treasurer; but in 1874 was elected Second Vice-President, though he continued to look after the company's financial affairs.

Mr. Frank Thomson, who will succeed Mr. A. J. Cassatt in the discharge of the duties relating to the supervision of the transportation department, the management of the passenger and freight business, and the special charge of the relations with competing and connecting lines, was born at Chambersburg, Franklin County, Pa., on July 5, 1841. He is the son of the late Hon. Alexander Thomson, who was President Judge of the Sixteenth Judicial District. He was educated at the Chambersburg Academy, and at the age of 17 years entered the shops of the Pennsylvania Railroad at Altoona at the time Colonel Thomas A. Scott was General Superintendent of the road, and early developed the natural tact and ability which have characterized him as a successful railway manager.

When the rebellion broke out, and Colonel Scott was summoned to the aid of the government, he detailed Mr. Thomson to take charge of the construction and operation of military railway lines, and in the performance of these duties he accomplished results of inestimable value to the government in the movement of troops and supplies. Resigning from the government service in 1864, he was appointed as Superintendent of the Eastern Division of the Philadelphia & Erie Railroad. In March, 1873, he was appointed Superintendent of Motive Power of the Pennsylvania Railroad Division, with headquarters at Altoona, and all the rolling and floating equipment and shops of the company were placed in his charge. In July, 1874, in the reorganization consequent upon the death of Mr. J. Edgar Thomson, President, Mr. Thomson was appointed General Manager of all the lines of the company east of Pittsburgh and Erie, and his successful administration of that important office has fully demonstrated his fitness for the more important duties of the executive position to which he has been assigned.

Mr. Thomson has introduced many important reforms and modifications in railway work and appliances. He devised standard plans and specifications for the construction and maintenance of road-bed and track, and inaugurated the system of annual competitive track inspection in use upon all the lines of the Pennsylvania Railroad, and closely followed by other leading railroads in this country.

Among these improvements may be mentioned the block signals and the interlocking switches, which insure not only greater safety but greater speed. Among the minor matters it is hardly necessary to call the attention of the traveling public to the uniformed trainmen and station employés, the elegance of the cars and stations, and the many provisions for the comfort of passengers, which are so noticeable in comparison with other roads, and which are chiefly due to Mr. Thomson's efforts. Nor has he neglected to provide for the comfort and convenience of the employés. Through his efforts buildings have been erected at various terminal points, in which there are reading-rooms supplied with

newspapers, periodicals and books, and similar facilities are furnished to passenger-train men in the passenger stations.

He has always taken great interest in the progress of the young mechanical and civil engineers who enter the service of the company in the shops or field to take their first lessons in practical railroad work, and has paid particular attention to defining their preliminary duties with a view to developing their peculiar talent for any particular line of work. He organized the Society of Transportation Officers of the Pennsylvania Railroad, having for its object the advancement of its members in the science of railway management, and the promoting of social intercourse. At the stated meetings of this society important questions are submitted for discussion, and many valuable improvements, resulting in increased efficiency and economy in the service, have resulted from the deliberations of this body.

Mr. Thomson was also instrumental in introducing upon the Pennsylvania Railroad the system of examining trainmen, without the aid of experts, for color blindness, defective vision and hearing, which will, no doubt, insure a greater degree of safety to travelers. He posesses in a remarkable degree an accurate knowledge of details, is quick to note any defect in the organization of his forces, and is prompt in supplying an effective remedy.

He is a practical, progressive and efficient railway manager, and, after his many years of exacting labor in the field, it is a fitting tribute to his ability to call him into the council chamber of the company.

Mr. Joseph N. DuBarry, the new Third Vice-President, was first engaged as an engineer in the construction of the Western Division of the Pennsylvania Railroad. He was afterward transferred to the Pittsburgh, Fort Wayne & Chicago, then building, and upon the completion of that road was appointed Superintendent of its Western Division. Subsequently he was made Superintendent and then Vice-President of the Northern Central Railway, and filled the latter position until 1873, when he resigned. About three years later he was appointed Assistant to the President of the Pennsylvania Railroad, and has held that position ever since. Mr. DuBarry has rendered efficient service in the department over which he presides and which, involving the construction of new roads, is now one of the highest importance, and is destined to grow more and more important every year, with the growth of the road.

Captain John P. Green, the new Fourth Vice-President, was, for many years, the well-known private secretary of Colonel Thomas A. Scott, and his services were so highly valued by Colonel Scott that when he was called to Washington to act as Assistant Secretary of War he took Captain Green with him, and afterward sent him to California to look after some of his private interests there. Captain Green was associated with Colonel Scott in his private office until 1874, when he was given the title of Assistant to the President, which office he has continued to hold under President Roberts, filling it to the thorough satisfaction of both, and showing that he was possessed in a remarkable degree of those rare qualifications which it requires. For the important special duties devolving upon him, the supervision of the extensive system west of Pittsburgh, which the Pennsylvania Company controls and operates, he possesses special fitness, on account of his thorough familiarity with the affairs, capacity and requirements of those lines, and his indefatigable industry.

Mr. Charles E. Pugh, who now becomes General Manager, was the agent and telegraph operator at Newport, and thence transferred to the office of Mr. G. C. Franciscus, the General Agent. He became Mr. Franciscus' chief clerk, and when that gentleman died succeeded him as General Agent at Philadelphia. He held that position until 1879, when he became General Superintendent of the Pennsylvania Railroad division.

In 1876 Mr. Pugh had charge of the Centennial station and the immense movement of the trains arriving at and departing from that busy point. In that, as in all the positions held by him, he has exhibited a singular aptitude for the successful administration of railroad affairs, and has contributed greatly to advance the interests of the company through his personal popularity with business men, among whom he has extensive acquaintance. He has also been very successful in retaining and extending an earnest devotion to the service of company among the large body of employés who have been under his direction.

Electrical Locomotives.

The sketch of the history of the application of electricity for locomotion, given in the following article from the *Engineer*, calls to mind that a man named Page, some thirty years ago or more (as nearly as we can remember) made some experiments with an electrical locomotive on the Washington Branch of the Baltimore & Ohio Railroad. Probably some of the readers of the *Railroad Gazette* will be able to give some information concerning this or other experiments with electrical locomotives in this country:

The President of the Institution of Mechanical Engineers, in his address at Leeds, urged the study of what we may term portation. The President of the British Association, in his address, called attention to the use of electrical apparatus in the transmission of power. It might have been assumed that Dr. Siemens would have directed attention to a subject he has been so closely connected with for many years, and it may not be out of place here to consider the present position of electrical apparatus as aiding in the transmission of power. Neither Pope's satire, nor the logic of facts, permit civilized humanity to rest content that "What ever is is right." Mr. Westmacott, drawing his examples from different directions, showed that there was a constant tendency towards perfection. In lighting tallow gives place to oil, oil to gas, and perhaps gas to electricity. The one takes the foremost place, the others act as subsidiary allies. So mud-paths gave place to acknowledged roads; the roads were macadamized; canals came into use, and railways followed—the latter being now the principals, the others the subsidiaries—all having their uses. But the fiat of progress is omnipotent. That which was first has been superseded, and it would be ridiculous to suppose that supercession has ceased. We do not argue that electricity will necessarily oust steam. At the present moment the contrary seems likely. But we may hold that the use of electricity will increase the use of and necessity for steam.

Long before the construction of the magneto-electric machine, and hence before the idea of a dynamo had been mooted, the possibility of utilizing electricity for motor purposes had been suggested. Prof. Salvator Dal Negro in 1832 published a paper in which he explained how he employed electro-magnetism to move machinery; while in January, 1833, Dr. Schulsen showed such a machine. Prof. Jacobi was at the same time carrying on his investigations, and in 1838, at the expense of the Russian Government, tried the experiment of propelling a boat by electro-magnetism. The vessel was 28 ft. long, 7.5 ft. wide, and drew 2.75 ft. water. The publication of Jacobi's letter to Faraday called forth one from Prof. Forbes, of Aberdeen, explaining the work of a townsman, Mr. R. Davidson, in the application of electro-magnetism as a moving power. Before describing Davidson's work, we must, however, refer to that of Davenport in the United States. This man, a blacksmith in Philadelphia, commenced in January, 1840, a newspaper entitled *The Electro-Mechanic and Mechanic's Intelligencer*. The paper was published in New York, and was printed by a press worked by an electro-magnet. Previous to this Capt. Taylor, also an American, had obtained patents both in America and in England for an electro-magnetic engine. To return to Davidson's work. This was, so far as we know, the first attempt to utilize electricity in propelling a locomotive. There must, we imagine, be men still living who witnessed the experiments, and although with our wider knowledge in 1882 we know all such attempts were necessarily doomed to fail, it would be interesting to be able to obtain more details. The making of history is always a difficult task; the making of history accurate in all its details is an impossibility. We ought, however, to obtain a fairly accurate account of the introduction of electricity into the mechanical arts, because such introduction is within the memory of living persons.

The central part of the axle on Mr. Davidson's carriage had fixed upon it a cylinder of wood. The wood was grooved longitudinally with several grooves at equal distances apart, and bars of soft iron were fitted into the grooves. The poles of horseshoe-shaped electro-magnets were brought within a short distance on opposite sides of the cylinder, and a commutator make-and-break arrangement designed to, at one moment, render a magnet or set of magnets active, at another to make them inactive was added. The current was obtained from batteries formed of pairs of iron plates with plates of amalgamated zinc between. There were six batteries, three at each end of the carriage, each battery having ten zinc plates 15 in. by 12 in. The carriage tried on the Edinburgh & Glasgow Railway, together with the apparatus, weighed over 5 tons, and was 16 ft. long by 6 ft. broad. The rate of motion obtained was about four miles per hour. The result was by no means satisfactory or startling, but compares favorably with the first results of many experimental trials on a practical scale. We know not what became of Mr. Davidson or his invention, and hope that this article may elicit further information.

A model electric locomotive was exhibited last year in the Belgian exhibits at the Paris Electrical Exhibition. This apparatus was stated to have been constructed in 1840. The Belgian catalogue is reticent of further information. We must, however, hasten from the impractical to the practical. It was not until the recent development of the dynamo machine for electric lighting purposes that specially close attention was given to it as a means of transmitting power. Whatever may be the future of electricity, as applied in the direction of locomotion, the merit of its first real practical application must rest with the house of Siemens & Halske at Berlin. At Dusseldorf, as is known to many members of the Iron and Steel Institute, at Berlin, at Brussels, at Paris, and at the Crystal Palace, tramways have been worked during a longer or shorter period, to show the practical nature of the application. A permanent line is in operation at Berlin, designed and worked by this firm. The principle of the arrangement is exceedingly simple. The current is generated by a fixed dynamo, and carried by conducting wires to, say, one rail of the line, the rails being fairly insulated from each other. The current passes from the rail through the wheel or by brushes to the dynamo fixed to the carriages and through it, causing its armature to revolve, and hence to revolve the wheel, and thus the train by the other rail and its connections to the second terminal of the fixed machine. Objections to this system were raised, because under most climatic conditions the insulation would be bad, and render the working of the line almost or quite impossible. Messrs. Ayrton and Perry have devised means to obtain satisfactory insulation under almost any conditions, and we believe that experiments on a practical scale will soon be carried out in America, if not in England, to test the correctness of their views. At the present time the Binks system is being shown at the Crystal Palace. This is a modification in details of the Siemens & Halske, the principle being the same. We cannot now dwell upon the suggestions and experiments that have from time to time been made to apply the electric current to other mechanical purposes. Suffice it to say that so far the dynamo has been by Hopkinson, by Siemens, by Schwendler, and others, shown to be a fairly economical transmitter of power, and that Siemens believes it may be still further improved. We think there is no doubt as to the improvement, and that it will be found ere long that, good as these machines are, it is not difficult to design a more economical and effective machine than has yet been produced. Historical facts have been dealt with here, theories and possibilities must be reserved for a future occasion.

THE SCRAP HEAP.

The Oldest Locomotive Engineer Again.

The Omaha *Bee* in a recent issue published an interesting biographical sketch of Mr. W. W. Goodale, whom it says is without doubt the oldest locomotive engineer in the world. Mr. Goodale now lives in Omaha with his son-in-law, Mr. Joseph Halstead, a conductor on the Union Pacific. Mr. Goodale used to live in Buffalo, and it is said of him that he is the man who took the first railroad train out of this city. This statement, however, is open to criticism. Mr. Goodale is now 79 years old, and nearly blind, his eyesight having been injured by an accident. He was a steamboat engineer on Lake Erie in 1830, '31, '32, running the old "William Penn," one of the first steamers on the lakes. He commenced running a locomotive engine on the Baltimore & Ohio Railroad in 1834. The engine he ran was the old "Arab," one of the first put upon the road. In 1840 Mr. Goodale went to Philadelphia and shipped a newly built engine from the old locomotive manufactory of Norris & Long of that city, by schooner to New York, from New York to Albany on a barge, and from Albany on the Erie Canal to within ten miles of Rochester. Here he set the engine up himself, put her upon the track of the new Rochester & Auburn road, which was only completed at that time for four miles, and, preparatory to raising steam, had to fill the boiler with water carried from the Erie Canal in buckets. From this road he came to Buffalo, and on Sept. 2, 1842, made the first trip from Buffalo over the Attica & Buffalo road. The trip was from Buffalo to within a few miles of Attica. The road was not opened through to Attica until 1844. The Buffalo & Niagara Falls Railroad was opened in 1837, the trains being drawn by horses. If this road be ruled out of the question Mr. Goodale's claim is probably indisputable. William Wallace was Superintendent of the Attica & Buffalo road, and a man by the name of Penfield was the conductor on this train. Mr. Goodale worked for a time on the Philadelphia & Reading road. In 1845 or 1846 he took the engines "Jack Little" and "Henry Ruggles" on the Long Island road running from Brooklyn to Greenport. Some time in 1856 he went to the Norwich & Worcester road with a new engine. In 1849, Mr. Norris, the Philadelphia locomotive manufacturer, sent him with an engine to Chili, South America. In 1852 he returned to the United States, and in 1854 he went west and went to work for the Chicago, Burlington & Quincy, where he remained until 1857, when, in fixing the grate in an engine furnace, he became overheated and took a cold which settled in his eyes, causing blindness, from which he never fully recovered, but sufficiently to accept a situation on the Hannibal & St. Joseph, during the administration of L. W. Towne and Charles Mead. He was given a new engine, the "Fort Scott." He ran on this road at such times as his eyes would permit, until about four years ago. His last work was running the switch engine in the yard at Brookfield, Mo. We have no doubt that more than one of our older readers, especially in railroad circles, will recall the subject of this sketch, and receive with genuine gratification the assurance that Buffalo's veteran engineer is now running on a straight track, with no more hard grades or heavy loads.—*Buffalo (N. Y.) Express.*

A Woman who Deserves Honor.

According to a reporter of that city, Miss Susan B. Anthony left St. Louis the other day for Leavenworth, with two medium-sized trunks for baggage. At first the baggage-master objected to check them both on a single ticket, and demanded pay for extra weight. "But," said she, "they together weigh less than the ordinary sized 'Saratoga.' I distribute the weight in this way purposely to save the man who does the lifting." The clerk looked at her incredulously. "And you tell me seriously that you do this simply out of consideration for the baggage-men?" "I do." "How long have you done it?" "All my life. I never purchased a large trunk, for fear I might add to the overburdened baggage-man's afflictions." The clerk walked off and conferred with the head of the department. Then the two returned together. "Do I understand," said the chief, "that you, of all women, have been the first to show humanity toward railroad people?" "That is a tenet of my creed." "Check that baggage," said the chief with emphasis; "and, when you run for office, Miss Anthony, you shall have my vote." "Mine, too," echoed the clerk, handing her the checks, and the trio parted happy.

A Strange Suicide.

A dispatch from Richmond, Va., Sept. 17, says: "Soon after the Richmond & Danville mail train left Amelia Court House yesterday the engineer discovered a man walking on the track ahead. He gave a whistle, whereupon the man stepped aside and continued walking along. When the train was within 25 yards of him he stretched himself on the ground with his body lying at an angle from the track and his head over the rail. The whole train passed over him and he was completely decapitated, the body lying on the outside of the track and his head between the rails. The suicide was well dressed, and certain papers in his pockets indicated that his name was George C. Mouse, of Michigan. He had the photographs of several ladies in his pockets."

"Know-Nothing" Stops.

In Massachusetts, when a train stops at a crossing, water tank, dead cow, or at any other than a passenger or freight station, it is called a "know-nothing stop" in the vernacular. It would be curious to trace the origin of the phrase. Perhaps it arose from the difficulty of obtaining information from train officials, as a rule, about a hot box or a cracked wheel.—*Cincinnati Commercial.*

The "Know-Nothing" stops, we believe, are those made at grade crossings of other roads and at draw-bridges. They were so called in Massachusetts because the law requiring full stops to be made at such places was passed by the famous "Know-Nothing" legislature of 1855. The name has stuck, while most people have forgotten its origin.

Jump.

The average life of a locomotive is only 30 years, but the average life of a locomotive engineer is 60. The engineer can jump.

It is proposed to change the name of Paoli station on the Pennsylvania Railroad to "Dyffryn Mawr." We shouyld lyke to heawr a conductwr cawll out the new name, ffrynstynce.—*Norristown Herald.*

The New York, Chicago & St. Louis road, it is said, will introduce summer cars "with Venetian blinds and hammocks." This promises luxury, surely. If the Nickel Plate will introduce a new kind of sleeping-car porter—one who can be civil without being silver-plated—there are no doubt several millions of people in this country who will patronize it in preference to all other lines.—*Buffalo Express.*

A disgusted baggage-master on the Long Branch road thinks that private palace cars may be all very well in their way, but that the really needed reform in railroad management is to put trucks under some of the big trunks that come down that way, and have them coupled on and hauled as private baggage cars.

Lake Barges for Carrying Iron Ore.

The barge "Specular" was successfully launched last week at Cleveland from the yard of Presley & Co. She was built for the Republic Iron Co. at a cost of about $80,000. She is four-masted, with fore-and-aft schooner rigging, with an after cabin on the upper deck and the forecastle between decks. The dimensions of the vessel are as follows: Length of keel, 260 ft.; length over all, 275 ft.; beam, 38 ft. 4 in.; depth of hold, 21 ft. The timber keelsons and frames are as large as any ever built, and her entire construction is solid and strong. There are two centre-boards, each of the boxes being 26 ft. long. It has not been decided whether steam will be put in her or not. For the present she will tow behind the steam-barge "Colonial." She is expected to measure 2,000 tons. In about two weeks the barge "Magnetic" will be launched by the same firm. She is an exact duplicate of the "Specular," and is alse built for the Republic Iron Co.

A Terrible Death.

On the evening of Sept. 11 a freight train on the South Pacific Coast road ran off the track on a pile bridge over a shallow arm of the bay near Alameda, Cal. The engine went off the bridge and fell into the mud of the creek, the tide being out at the time. The fate of the fireman is thus described by the San Francisco *Evening Post*:

"The fireman, Daniel Driscoll, met a horrible fate, his death being under the most excruciating mental and physical torture. He was caught under an iron bar as the engine overturned and was pressed down into the soft ooze of the bay. Willing hands at once went to work to release him. It was found that the bar gripped him like a vise. Sheets were placed about him, and strong arms pulled and tugged to effect his release, but without avail. Every pull was torture most intense, and slowly the immense mass settled, crushing the unfortunate man deeper into the mire. Another horror now appeared in the rising tide. The spot was several feet under water at high tide. As the water kept creeping up to the doomed man a bulkhead was built and his head was kept above water. He remained thus for two hours, when the levee broke and the water rushed over him in a torrent. A friend, in a last effort to save him, placed his hand over poor Driscoll's mouth. The water rose to his nostrils, and soon all was over. Driscoll lived in Alameda. He was a single man and had been in the company's employ four years."

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EDITORIAL ANNOUNCEMENTS.

Addresses.—*Business letters should be addressed and drafts made payable to* THE RAILROAD GAZETTE. *Communications for the attention of the Editors should be addressed* EDITOR RAILROAD GAZETTE.

Contributions.—*Subscribers and others will materially assist us in making our news accurate and complete if they will send us early information of events which take place under their observation, such as changes in railroad officers, organizations and changes of companies, the letting, progress and completion of contracts for new works or important improvements of old ones, experiments in the construction of roads and machinery and in their management, particulars as to the business of railroads, and suggestions as to its improvement. Discussions of subjects pertaining to* ALL DEPARTMENTS *of railroad business by men practically acquainted with them are especially desired. Officers will oblige us by forwarding early copies of notices of meetings, elections, appointments, and especially annual reports, some notice of all of which will be published*

Advertisements.—*We wish it distinctly understood that we will entertain no proposition to publish anything in this journal for pay,* EXCEPT IN THE ADVERTISING COLUMNS *We give in our editorial columns* OUR OWN *opinions, and those only, and in our news columns present only such matter as we consider interesting and important to our readers. Those who wish to recommend their inventions, machinery, supplies, financial schemes, etc., to our readers can do so fully in our advertising columns, but it is useless to ask us to recommend them editorially, either for money or in consideration of advertising patronage.*

THE MASTER CAR-BUILDERS' MEETING IN OCTOBER.

As announced in this and other numbers of the *Railroad Gazette*, an adjourned meeting of the Master Car-Builders' Association will be held at Niagara Falls Oct. 10. A circular letter, which has just been issued by the President of the Association, will be found on another page, calling attention to the importance of this meeting and to the objects of the Association, and requesting the general officers of railroads to send representatives. As there still seems to be some misapprehension concerning the re-organization of the Association, which is the main purpose of the adjourned meeting to be held in October, and of the objects and motives which have led to it, a plain statement of these and of the history of the movement may do some good.

The Association was organized, or as expressed on the cover of one of the early reports, was "instituted" Sept. 8, 1867, so that on the date of the coming meeting it will be almost exactly fifteen years old. No attempt will be made to detail the work which has been done in that time. There can be no doubt, though, that the annual meetings of the master car-builders have been productive of a great deal of good, but it is equally certain that during that time the Association has not accomplished as much as its splendid opportunities would lead any one interested in its work to expect of it. As was stated in a circular issued by the Committee on Reorganization dated April 8 of this year, "the Association is a voluntary organization of the master car-builders of this country and Canada, and, as an association, it receives no support whatever from the railroad companies. * * * Neither are the railroad companies directly represented in the Association. * * * It was therefore thought by some that * * * if the work which the Association has done and should do was adequately explained and understood by the chief executive officers of the railroads they would be inclined to co-operate with the Association and assist in its work." By talking with prominent railroad officers it was easy to learn that all were agreed with reference to the importance of having the work done which was before the Association and which it had to some extent undertaken. The evils of diversity and the advantages of uniformity were admitted by all. The difficulty, though, was to create an organization through which a wise agreement of the railroad companies, or of their executive officers, in relation to these matters could be brought about. The Car-Builders' Association, as it has heretofore existed, has been instrumental in doing this to only a limited extent. It was an association in which master car-builders could, and about some matters did, agree; but it was not an association which could bring about any agreement of superintendents, general managers, presidents or the companies which they represent, excepting in so far as these officers might adopt the recommendations of the Master Car-Builders' Association. United action of the general officers could not be brought about because the general officers had no part in the proceedings. It was also hopeless to expect that these officials would meet together to determine such matters as the car-builders of their lines ought to be able to decide. The only thing which could be done then was, if possible, to induce the chief executive officers of the companies to send representatives to the Car-Builders' Association meetings, and thus have the companies take part by deputy in the proceedings.

The matter was first brought up for consideration at the meeting held in Detroit in 1880. At that meeting the depleted condition of the treasury was brought to the notice of the meeting by the Secretary, and this led Mr. Hopkins to express the opinion that "some action should be taken with a view of inducing railways to contribute to the support of the Association." This was followed by a long discussion, in which various plans were proposed, among them one that railroad companies should be induced to become members of the Association and contribute to its support. An animated discussion resulted, during which a member offered the following resolution:

"*Resolved*, That a committee of five, including the Chairman, be appointed to prepare a statement of the objects of this Association, to be presented to the managers of the railroads of the country, with the request that the latter send representatives to the meetings of the Association, for the purpose of aiding in carrying out these objects, the committee to be authorized to call a special meeting of the Association, if they think it expedient to do so, for the purpose of making any changes in the organization that may appear desirable."

This resolution was referred to a committee which reported at the meeting the following day. The only material change made in the resolution was that the railroad companies be requested to "send representatives *who are master car-builders or foremen in the car departments.*" An amendment was offered to strike out this clause and leave the resolution substantially as it was originally presented. This again led to a lively discussion, which developed the fact that there was a strong opposition to admitting any representatives who are not master car-builders or foremen of car shops, and attention was called to the fact that it would be unconstitutional to admit those who are not car-builders. This proved to be fatal to the resolution, and it was laid on the table.

At the meeting held in 1881, in New York, this difficulty was met by presenting the amendments to the constitution which are appended to the President's circular on another page. These were referred to a special committee of five, who were instructed in the plain language of Mr. Adams "to take what steps they like towards making the thing public, and getting the opinions of the various corporations, etc."

In accordance with these instructions, this committee issued the circular dated April 8, 1882, which was published in the *Railroad Gazette* of April 14, and was sent to all the general railroad officers of the country.

The committee received a large number of replies from the persons to whom it was sent. The substance of those replies was embodied in a report which the committee made to the Car-Builder's Association at its meeting held in June of this year in Philadelphia and which was also published in the *Railroad Gazette* of June 23. The result of the report was that the amendments were unanimously adopted, and a resolution was passed calling the adjourned meeting of the Association to be held Oct. 10, and instructing the committee to suggest any changes in the constitution which in their opinion may be desirable.

It may be said here, for the information of those interested in the Association, that the constitution has been thoroughly revised by the committee, and a good many changes and additions will be brought up for consideration, and, therefore, it is important that as many members as possible should be present to discuss and act on the amendments, which will, to a considerable extent, influence and shape the future action of the Association.

In a previous article (see *Railroad Gazette* of June 23) the immense amount of saving which may be effected through the Car-Builders' Association was pointed out. This possible saving is so great that railroad managers can hardly overestimate the importance of its work. The difficulty which has stood in the way of improving cars and making them uniform has been, as stated in the beginning of this article, that there has not been any organization through which railroad companies could co-operate in such matters and thus by mutual agreement bring about joint action. Such an organization the Car-Builders' Association will now be or may be made if the superior officers of the railroads will only co-operate in the new organization. There will be an opportunity at the October meeting to make any changes in its constitution that two-thirds of the members present at that meeting can be convinced are desirable. If railroad companies, or their chief executive officers, or if master car-builders will not take any part in this meeting and in shaping the Association into such a form as it ought to have, they will, to a very great extent, be to blame themselves for its imperfections. The invitation is to every railroad company to send a representative, and to every master car-builder and foreman of railroad car shops to come if he is not sent.

There is unfortunately some misapprehension about this matter, and it is hoped that all interested in the Association will read Article III. of the constitution carefully. If they do so they will see that by Section 2 of that article "any person holding the position of Superintendent of the Car Department, Master Car-Builder, or Foreman of a railroad car shop, or one representative from each car manufacturing company, may become *an active member*" by simply coming to the meeting and signing the constitution, or if he cannot come, authorizing the President or Secretary to sign for him and then paying his dues, which heretofore have been $5 per year. Such members have one vote in the Association.

Next, any railroad company can be represented in the Association by any one person "having a practical knowledge of car construction" who is appointed *in writing* by the President, General Manager or General Superintendent as a *representative member*. Such member will then have one vote in virtue of his membership, and "in all measures pertaining to the adoption of standards or the expenditure of money" he will have one more vote for each thousand cars owned by the company he represents. His annual dues will be in proportion to his vote.

For some reason it seems to be difficult to get the distinction between *active* and *representative* members properly understood. Some of the old members, and some car-builders who are not members, seem to have the impression that under the new regulations they have no right to attend the meetings unless they are sent or appointed by their superior officers. A very little care in reading the amended constitution ought to disabuse their minds of this error.

On the other hand, some of the superior officers have the impression that if they appoint a *representative* no other person from their road can be a member. It will be seen that this too is a mistake. A railroad manager may appoint a representative member and yet every master car-builder or foreman of car shop on his line may attend the meetings and be an *active* member of the Association.

To quote from the circular of the President: "In most cases, no doubt, the Master Car-Builder will be the most suitable person to appoint (as a representative), but should there be reasons for sending any one else, it is hoped that the Master Car-Builder will also attend the meetings." It seems to be of the utmost importance that the practical men should exercise their due influence in the Association. The experience of men who are acquainted with the details of the shop, who know how, when and where cars fail, who are accustomed to make daily diagnoses of their diseases and accidents, is invaluable at such meetings. Men in such positions often have no capacity of presenting what is in their minds before a deliberative body, or of arranging their knowledge in a systematic way, and in some such cases it may be desirable to send some one who has the gift of expression, but the practical man should be sent with the talking man to advise with him.

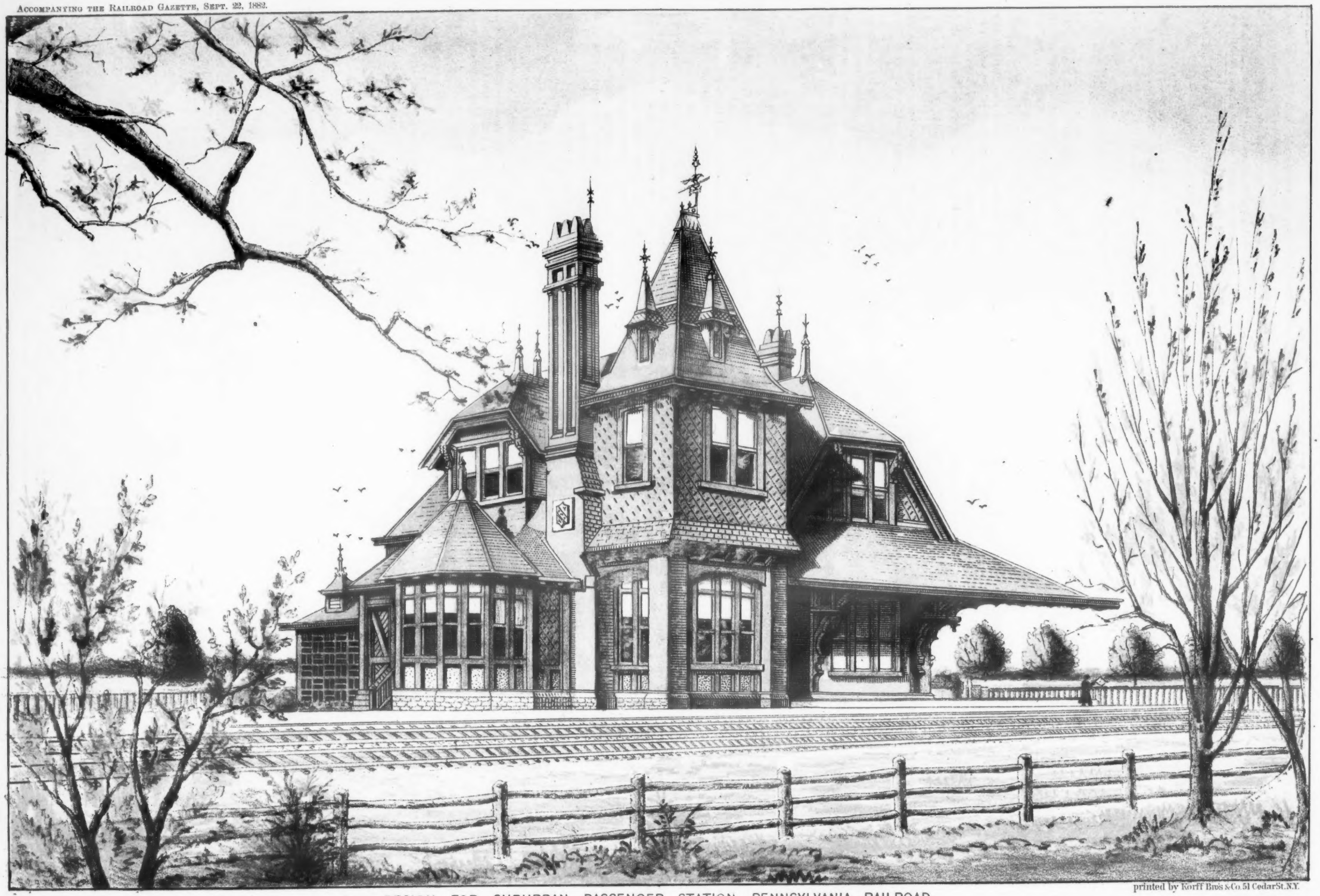
It may be said here that it often happens that a car-builder may have a hesitation in going to such meetings unless he is told to go by some one in authority above him. It is true too that nearly every man in such a position would feel complimented by being instructed to attend meetings of this kind. Managers and superintendents would therefore do well, if they do or do not appoint representatives, to instruct their practical car-builders to attend the meetings. To quote again from the President's circular:

"It is also believed that few master car-builders can fail to be benefited by the discussions at the meetings, and by intercourse with persons engaged in the same occupation as themselves. At such meetings new ideas are received, prejudices are removed, and those who attend them go home better educated and better fitted to perform their duties."

It is hoped that the railroad companies will be generally represented, and that as many of the car-builders as can will attend the Niagara meeting, and that they will bring their wives and daughters with them.

FOREIGN IMMIGRATION.

Immigration in August was less this year than last, which has not happened for many months before. The figures are 48,076 this year, against 56,744 last



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DESIGN FOR SUBURBAN PASSENGER STATION, PENNSYLVANIA RAILROAD.

By Wilson Brothers & Co., Philadelphia.

year. In July the number was 8,403 greater this year, and during the fiscal year ending with June the arrivals were 789,003 this year, against 669,431 last year, an increase of 119,572, or about 18 per cent. Of this total increase no less than 101,300, or nearly 85 per cent. arrived at New York, and it received 64 per cent. of the whole number, against 60 per cent. the year before. Next to New York stands the customs district of Huron, which is the Grand Trunk station at Fort Gratiot, opposite Sarnia and just above Port Huron. Here the arrivals were 71,424 this year (9 per cent. of the total immigration), against 111,170 last year (16.6 per cent. of the whole). The arrivals here are partly Canadians, but doubtless chiefly Europeans brought from Montreal by the Grand Trunk Railway.

Whether the customs officials accurately ascertained how many of these immigrants were destined to the United States and how many to Manitoba, which latter has received most of the Canadian and perhaps also most of the English immigration this year, is questionable. Third in the list comes Boston, which received 7.4 per cent. of the whole number this year, against 6.1 last year, but not an eighth as many as New York this year. San Francisco shows an increase of 20,236 and 163 per cent.; as there was an increase of 27,689 in the immigrants from China, we may credit its gain to this movement.

The arrivals at the Atlantic ports for the two years have been :

	Year to June 30. 1882.	1881.	Inc. or Dec.		P.c.
New York	502,171	400,871	Inc.	101,300	25.2
Boston	58,188	41,022	"	17,166	41.8
Baltimore	41,739	40,017	"	1,722	4.3
Philadelphia	36,284	34,865	"	1,419	4.1
New Orleans	3,142	3,284	Dec.	142	4.3
Total	641,524	520,059		121,465	23.4

The percentage of the total Atlantic arrivals at each port was:

	New York.	Boston.	Baltimore.	Phila.	N. O.
1881-82	78.3	9.1	6.5	5.6	0.5
1880-81	77.1	7.9	7.7	6.7	0.6

As the immigrants are carried solely by steamers, and nearly all by regular steamer lines, the existence of a large export trade carried by sail does not promote immigration. The Baltimore exports, when large, are mostly by sail. Boston has the largest number of steamer lines, next to New York, and this secures it a larger share of the immigration than it could otherwise secure. The immigration, however, follows pretty closely the course of the import trade, except that it is more at Baltimore than at Philadelphia, while Philadelphia considerably exceeds Baltimore in imports.

The trifling arrivals at New Orleans will be noted. In a single day the arrivals at New York have been twice as great as those at New Orleans during the entire year. But there never has been any considerable *foreign* immigration to the South, and the foreigners who are there have made their way thither chiefly from the North.

Whether the falling off in August denotes the beginning of an ebb in the tide of immigration, it is too early to say. It will not do to judge by the figures for a single month, and to all appearances the country offers greater attractions now than it did a year ago. We must remember, however, that the immigration of any month is probably mostly prepared for three months or more in advance, and while last year in August there was perhaps not as fair promise of prosperity as there had been, in June the country was very confident, as shown by the fact that then railroad securities bore nearly their highest prices; and last June there was certainly less confidence than there is now. On the other hand it is unreasonable to suppose that the current of immigration can long continue as heavy as during the past two years. The movement has always been tidal, as it were, and though the high tide has sometimes lasted seven or eight years, yet we have now reached a much higher point than ever before, which it may be more difficult to maintain long. The sources of immigration are now substantially what they always have been; the impulse to immigration, so far as it comes from an unsatisfactory condition of things abroad, would seem to be less now than it has been frequently heretofore, as after the Irish famine and the Franco-German war, and the great depression of business in Europe after 1873; so far as supplied by the attractions of this country, there is not much change. The facilities for immigration are doubtless greater now than ever before—that is a greater number can be carried in safety and comfort, and cheaply; though perhaps, there is not to the average immigrant any considerable advantage in this respect that he could not have had at any time since 1870.

The very presence here of an immense number of their countrymen, however, has a very marked influence in promoting the immigration of Europeans. They know that they will come to a country where they have many friends, and will not be wholly among strangers.

The course of immigration since 1843 may be seen below, where the arrivals each year are given :

Year to Sept. 30.	Immigrants.	Year to Jan. 1.	Immigrants.	Year to June 30.	Immigr'nts.
1844	78,615	1856	195,857	1868	282,189
1845	114,371	1857	246,945	1869	352,768
1846	154,416	1858	119,505	1870	387,203
1847	234,968	1859	118,616	1871	321,350
1848	226,527	1860	150,237	1872	404,806
1849	297,024	1861	89,724	1873	459,803
1850	310,004	1862	89,007	1874	313,339
Year to Jan. 1.*		1863	174,524	1875	227,498
1851	379,466	1864	193,195	1877	141,857
1852	371,603	1865	247,453	1878	138,469
1853	368,645	To June 30.		1879	177,826
1854	427,833	1866	†166,112	1880	457,257
1855	200,877	1867	298,967	1881	669,431
				1882	789,003

* During the quarter to Dec. 31, 1850, 59,976 arrived. † Six months, January to June, 1866.

Before 1845 there had been but one year in which so many as 100,000 immigrants arrived. From 1844 to 1855 inclusive, all alien passengers arriving are classed with immigrants, but this does not make an important error; for in the next ten years, during which 1,649,672 alien passengers arrived, only 24,613 were not immigrants.

We see after the Irish famine a great movement (in proportion to our population then) which began in 1847, and culminated in 1854, but remained near its highest point for five years then ending. It fell off one half from 1854 to 1855, and grew smaller, with one exception, till after the second year of the war; but it did not become large again till the end of the war; after which it remained large, but without rapid increase, until it reached its maximum (459,803) in the year ending with June, 1873. This period of rapid immigration was that of the business activity and prosperity that followed the war. The decrease after 1873 was rapid, and immigration was at its minimum in 1878, when it was not one-third as great as in 1873. That year business had begun to revive; the maximum prosperity was doubtless in the two years to June, 1881, and it is the prosperity of those years and the year before, the construction of railroads at the rate of nearly 10,000 miles a year, the opening of vast areas of new country for [illegible] not only here, but in British America, that [illegible] us the unexampled influx of the last two years. For the settlement of Manitoba has undoubtedly had a favorable effect on business in this country, giving a market for no inconsiderable amount of our manufactures and merchandise, especially now while that country has no outlet, except through the United States. Should the immigrants who went there this year find their expectations fulfilled as to the profits of farming there, however, Manitoba will henceforth doubtless attract a very large share of the immigration that hitherto has sought the United States, and, with the completion of the Canada Pacific between Lake Superior and Winnipeg, a smaller share of the traffic will pass through this country.

The continuance of a heavy immigration is of great importance, especially to the roads on the border; but it will take but a few years now to settle the most promising parts of the country, which the new lines in Dakota, Nebraska and further West have made accessible, and, if meanwhile we do not have a new crop of border roads, a decrease of immigration will not be necessarily a great misfortune to the railroad interests. Last year, however, the increase of population by immigration must have been considerably more than half as great as by the excess of births over deaths.

The effect of immigration on the country—that is, its average effect on any one industry or locality—must be estimated not so much by its mass as by its proportion to the total population. The addition of 10,000 people to a town of 50,000 has a very marked effect; in a town of 500,000 it is hardly known. Calculated in this way, last year was not that in which immigration had most effect. Below we give the arrivals of immigrants per 1,000 of population in the United States in years when the influx has been very large or very small:

Year.	Per 1,000.	Year.	Per 1,000.
1850	13.78	1878	2.98
1854	16.70	1879	3.72
1862	2.43	1880	9.53
1870	10.26	1881	13.26
1873	11.07	1882	15.22

The year 1854 is thus the one in which there was the largest percentage of increase by immigration; but last year stands next and close to it.

The increase of population per 1,000 without immigration we estimate as not more than 22½ (2¼ per cent.), which, with the immigration, will fully account for the total increase of population from decade to decade. Perhaps 2 per cent. would be more nearly the truth. Thus the growth by immigration in such years as last year is a most important part of the whole growth, and when it falls to less than 3 per 1,000, as it did in 1878, 1862 and 1861 it must make a very appreciable difference in the demand for commodities and the activity of business. All enterprises in a growing country like this are planned to meet the demands of a continuous growth. When growth ceases or greatly slackens in rate, industries which have been fully employed lack a market. The industries expand in accordance with the growth of the demand which they have experienced, and if the demand becomes simply stationary, their market is not large enough.

We are not able to follow with anything like accuracy the distribution among the several states of the immigrants arriving. We know enough, however, to show that the new arrivals do not go to the Far West chiefly, as is commonly supposed. The Superintendent at Castle Garden has kept a record of the avowed destination of the immigrants arriving at New York during the first half of this calendar year, by which it appears that out of 278,342 arriving 99,627 gave their destination as New York, 25,602 Pennsylvania, and 142,877, or more than half of the whole number, for the states east of Ohio and north of the Potomac. Doubtless a large proportion of those whose destination was New York were on their way further west, but had not yet determined on their destination. Nevertheless, there is no doubt that most of the immigrants know where they are going before they start, and that the state of New York absorbs a very large number of them. They are not all and not mostly farmers, but come from towns and cities in Europe, and will live in towns and cities in this country, as may be known by the fact that a very much larger proportion of the town than of the country population throughout the country is made up of foreigners.

The numbers destined to all the states south of the Potomac and the Ohio and the state of Missouri was but 4,686, and 2,089 of these were going to Texas, where for many years there has been an important German settlement. The older Western states this side of the Mississippi—Ohio, Michigan, Indiana, Illinois and Wisconsin—took 79,800, nearly one-third of all; and the three states next west of the Mississippi—Minnesota, Iowa and Missouri—are credited with 31,391. It should be said, however, that there are what may be called secondary immigrant distributing stations at Chicago, Milwaukee, St. Paul and St. Louis, and that to many, doubtless, these "destinations" are simply places where they determine upon their further movement. They, and the towns of these states, however, become the homes of very large numbers of immigrants. To the states where agriculture is extending most rapidly the following numbers were credited: Minnesota, 14,287; Dakota, 2,107; Iowa, 11,504; Nebraska, 4,458; Kansas, 2,209; Texas, 2,089.

Making all allowance for the change in final destination of many immigrants and the arrivals at other ports, it remains certain, as we have often said, that the settlement of the new lands in this country is not mostly by foreign immigrants, but by Americans, who move from the older to the newer states, as they always have done, and make new farms of cheap land as soon as in the country where they were born land becomes so high that a young man leaving his father's farm is not able to buy one.

Foreign Railroad Notes.

The mileage and earnings of the entire railroad system of France are reported as follows for the years 1881 and 1880:

	1881.	1880.	Increase.	P. c.
Miles at end of year	15,698	14,756	942	6.4
Average miles worked	15,145	14,483	662	4.6
Gross earnings	$207,653,382	$199,795,430	$7,857,952	3.9
			Decrease.	
Earnings per mile.	$13,718	$13,802	$84	0.6

Of the total mileage worked last year, 12,824 miles belonged to the six great companies, about evenly divided between what are known as the "old system" and the "new system," each company having lines of both systems—altogether, 6,433 miles of the old and 6,391 of the new system. The earnings of the "old system," which included 42½ per cent. of the whole mileage in France, was 73.7 per cent. of the whole, the average earnings per mile of these roads being $23,797; while the average of the "new system" was $7,166—the latter not far from the average in this country for the last year reported ($7,677). The system belonging to the state was increased from 1,425 to 2,185 miles during 1881, and the average worked was 1,751 miles. Its average earnings per mile were $2,737, and $177 less than in 1880. These lines have many of them been undertaken or bought by the state because no company working for profit would take them up.

The largest earnings per mile in 1881 were by the Paris Belt Railroad, 12¼ miles long, which is partly a city road They amounted to $105,647. Next stands the "old system" of the Northern Railroad, earning $31,332 per mile on 834 miles of road. The greatest of the French companies, the Paris, Lyons & Mediterranean, earned $22,022 per mile on the 2,784 miles of its old system, and $4,781 per mile on the 958 miles of its new system, besides $15,623 per mile on the 90 miles of its "special system," which consists of its road from the Rhone to Mt. Cenis. One of the state roads earned $560 per mile. The smallest earnings per mile of a road worked by a company were $1,018, on a line about

14 miles long. The average of the private roads not included in the six great companies was $5,561.

The Administration of the Prussian State Railroads has ordered that weekly commutation tickets shall be sold to workmen employed away from their places of residence, good for the journey from the place of their residence to the place of their employment on Monday and from the place of their employment to their residence on Saturday, at the rate of a trifle more than half a cent a mile.

In the French colony Algeria, there were 922 miles of railroad at the close of 1881, 109 miles having been added during the year. The average in operation during the year was 848 miles, which earned an average of $3,312 per mile. This is an increase of 13⅝ per cent. over 1880. The Tunisian war probably had considerable effect on the traffic of 1881.

The new Gotthard Railroad earned at the rate of $750 per mile in June and $937 in July. It is very little used by its Italian connections as yet.

Record of New Railroad Construction.

This number of the *Railroad Gazette* contains information of the laying of track on new railroads as follows:

Atchison, Topeka & Santa Fe.—This company's *New Mexico & Arizona* line is extended from Crittenden, Ar., southward 32 miles.

Bangor & Portland.—Extended southwest to Nazareth, Pa., 5 miles.

Denver & Rio Grande.—The track of the *Utah Extension* is laid from Montrose, Col., westward 18 miles. Gauge, 3 ft.

Gulf, Colorado & Santa Fe.—The track of the *Dallas Division* is extended into the city of Dallas, Tex., 2 miles.

Houston, East & West Texas.—Extended from Natchez, Tex., northeast to Lufkin, 15 miles. Gauge, 3 ft.

Natchez, Jackson & Columbus.—Extended from Raymond, Miss., northwest to Jackson, 17 miles, completing the road. Gauge, 3 ft. 6 in.

New York, West Shore & Buffalo.—There are 37 miles of track laid in detached sections between Cornwall, N. Y., and Syracuse.

Northern Pacific.—Extended from Billings, Mon., west to Park City, 24 miles.

Ohio Central.—Extended from Corning, O., southward to Athens, 17 miles.

St. Louis & San Francisco.—Track on the *Arkansas Division* is extended from Winslow, Ark., south by west to Mountainburg, 15 miles.

Sanford & Indian River.—Completed from Sanford, Fla., southeast to Lake Jessup, 6 miles. Gauge, 3 ft.

Southern Pacific.—The branch to the Colorado River is completed for fifty-two miles eastward from Mohave, Cal., an extension of 21 miles.

Toledo, Cincinnati & St. Louis.—The *Southeastern Division* is extended southward to near Gallia Furnace, O., 15 miles. Gauge, 3 ft.

This is a total of 224 miles of new railroad, making 7,164 miles thus far this year, against 4,474 miles reported at the corresponding time in 1881, 3,539 miles in 1880, 2,064 miles in 1879, 1,245 miles in 1878, 1,335 miles in 1877, 1,599 miles in 1876, 761 miles in 1875, 1,082 miles in 1874, 2,691 miles in 1873 and 4,765 miles in 1872.

THE ROCK ISLAND'S CLAIM FOR ST. PAUL AND MINNEAPOLIS TRAFFIC was not for one third of the whole, as was reported last week, but for one third of the Minneapolis and 22 per cent. of the St. Paul traffic, the Northwestern and the St. Paul companies offering it 15 and 10 per cent. respectively. Doubtless the Rock Island has been able to command a large share of the Minneapolis shipments through its Minneapolis & St. Louis connection. This is particularly a Minneapolis road, and was looked upon especially as a miller's road. It was managed, and constructed, we believe, by Mr. W. D. Washburn, a leading Minneapolis miller, and it has connections with the Minneapolis mills, so as to be able to deliver wheat to them and take flour from them directly. The through shipments from Minneapolis are nearly all flour, and are immense. St. Paul is the commercial town, and probably receives from the East several times as much through freight as Minneapolis. The Minneapolis & St. Louis does not reach St. Paul at all by its line, but the freight it carries consigned to that place is delivered by the Manitoba road.

The three companies being unable to agree upon a division of the traffic, have made a contract to maintain rates strictly under the supervision of a joint agent for one year, each to take what it can get under these circumstances. There is no objection to this, if they can devise any way to secure the maintenance of rates. But this is just what has been at the bottom of all the troubles the railroads have ever had with each other. Practically, experience has shown that, if it is to the advantage of a company to divert traffic from a competitor, there are so many ways of doing it, and so many ways of concealing them, that it is almost sure to be done to a greater or less extent. The co-operation of the roads for the purpose of dividing the traffic takes away the motive for diverting it by cut rates, rebates, passes to shippers, and the other underhand methods in which soliciting agents have been made proficient by years of warfare.

It is to be said, however, that the difficulty increases about in proportion to the square of the number of competitors. When there is a dozen, then it is sixteen times as difficult as when there are but three, as at St. Paul and Minneapolis.

The rates have generally been maintained at profitable figures from these places, and it would be a great misfortune to the Northwertern and the St. Paul to have them permanently reduced, as rates have been to other Mississippi River points south of Clinton. The traffic is not only large, and gives a long haul to these roads (more than 400 miles), but it is growing with great rapidity; and if the settlement of Dakota and Manitoba keeps on at the rate of the last two years, it will soon become very much larger. Rates are limited there by the nearness of Lake Superior, which by one railroad is 154 miles distant; but this route has hitherto taken but a small share of the traffic, and has not prevented the maintenance of rates between Chicago and St. Paul nearly as great as those between Chicago and the "Missouri River points."

LAKE RATES have been up as high as 2¾ cents a bushel for corn and 3 for wheat from Chicago to Buffalo; but for about a week have been 2¼ and 2½ cents. Rates on coal from Buffalo to Chicago, which until August had been generally 70 and 80 cents a ton, went down to 50; but have recovered to 60. These rates up seem to vary inversely as the grain rates down. An active movement of grain brings such tonnage to Buffalo that the vessels compete for cargoes up, and, *vice versa*, when the grain rates are very low and few vessels arrive at Buffalo, the coal shippers find difficulty in securing vessel room, and bid the rates up. Though the lake shipments have increased largely since July, they are still light, as may be seen by the following comparison of them (from all ports; not from Chicago alone) from week to week for four years:

Shipments of Grain by Lake.

Week to—	1879.	1880.	1881.	1882.
July 8	2,592,780	4,316,441	3,702,448	1,104,549
" 15	2,694,378	4,769,779	2,837,841	1,444,745
" 22	2,540,303	4,246,459	2,691,917	2,070,305
" 29	3,615,157	5,032,854	2,632,659	2,607,380
Aug. 5	3,128,508	4,300,883	2,571,441	2,548,641
" 12	3,718,403	4,403,302	3,629,635	1,989,870
" 19	4,630,276	4,530,812	2,950,075	2,464,006
" 26	4,420,623	4,757,232	3,623,942	2,164,237
Sept. 2	3,802,438	4,346,194	2,464,363	2,457,879
" 9	3,692,053	4,191,031	3,490,065	2,809,964
Ten weeks	34,834,919	44,894,987	30,594,386	21,661,576

Last year during all these weeks, and in 1879 during most of them, the lake vessels had to compete with railroad rates which were less than cost, and yet we see that the lake shipments for the ten weeks this year were 30 per cent. less than last year, and 38 per cent. less than in 1879, while in 1880, when rail rates were maintained at 30 cents per 100 pounds throughout the season, the lake shipments were 23,233,000 bushels (107 per cent.) more than this year, when rail rates were well maintained at 25 cents. As since 1880 the lake fleet has been considerably enlarged, it is plain that many vessels must have been idle much of the time this year. There have been, however, much larger shipments of iron ore and lumber this year, which have given employment to some of the tonnage set free by the great falling-off in the grain movement. Only small vessels, or vessels of light draft, can be employed in the lumber trade, however, the lumber ports having generally shallow harbors. The smaller grain vessels as they grow old go into the lumber trade, but the recent additions to the grain fleet have been chiefly of the largest class.

Canal rates, which had been 5 cents for corn and 5½ for wheat from Buffalo to New York, have risen to 5½ and 6.

Recent shipments of grain from New York by steam to Liverpool have been reported at 4d. and 4¼d., and there have been but small fluctuations from these rates, though when different they have generally been higher.

IMPORTS OF RAILS FROM GREAT BRITAIN continue light. The Board of Trade returns show that the exports to the United States in August were but 13,179 tons then, while the average for the previous seven months of this year was 20,007 tons. The average course of exports to the United States from month to month for three years has been:

British Rail Exports to the United States

	1879.		1880.		1881.	
	Steel.	Iron.	Steel.	Iron.	Steel.	Iron.
September	8,429	10,052	3,880	20,211	5,922	
October	481	5,971	14,092	3,573	14,327	4,981
November	6,692	2,585	10,702	4,884	10,951	4,393
December	3,376	3,504	2,995	10,651	13,242	3,467
	1880.		1881.		1882.	
January	7,350	7,941	1.705	5,066	18,504	8,763
February	6,162	6,608	4,390	10,419	17,774	5,404
March	4,010	10,518	14,891	10,829	19,757	2,508
April	7,075	13,727	28,050	10,352	14,459	1,752
May	22,968	6,305	22,628	17,206	9,517	2,140
June	16,342	17,572	21,082	10,616	21,223	.....
July	7,054	7,785	20,096	6,728	18,200	46
August	11,853	4,419	23,820	5,763	12,979	200
12 mos.	93,363	95 364	174.493	100.567	191,144	39,576

This includes the entire period of active imports by this country. The revival may, perhaps, be said to have begun in August, 1879, when the British exports to this country were 4,584 tons, against 1,218 in July, and 7,730 in the whole of the first half of the year. We see that for the year ending with August, 1880, the takings of iron slightly exceed those of steel; but in the four months August to November, 1880, we took nearly three times as much steel as iron, and in the year ending with August last year our steel imports were three-fourths more than our iron imports. About the time we had made a rail famine, in the winter of 1880-81, we stripped the world of its spare rails, and in doing so imported three times as much iron as steel, but since then the steel imports have always been much the largest, and for the twelve months ending with August last there have been nearly four tons of steel imported for every one of iron, and in the last three months the iron imports have all but ceased.

The decrease in the rail exports of late months and the reduction in the price of rails more than one-fifth since the beginning of the year, in the face of an unexampled consumption of rails for new roads, indicate some slackening in the rate of construction in future months. We must bear in mind, however that there has been a large increase in the capacity, and doubtless in the outturn, of the home works this year, at least of the Bessemer works. The decrease in imports so far is but a trifle in comparison, and a very small increase in production would make up for it. It is only in connection with the great increase of new roads and the lower prices that smaller exports are significant.

THE AUGUST BREADSTUFFS EXPORTS show a revival in wheat and flour, but the corn exports are insignificant. The amounts for two years were:

	1882.	1881.	Inc. or Dec.		P. c.
Flour bbls	676,115	598,876	I.	77,239	12.9
Wheat, bu	20,821,097	14,378,024	I.	6,443,073	44.8
Corn bu	269,128	6,704,984	D.	6,435,856	96.0
Other grains	203,004	235,698	D.	32,694	14.0
Total, bu	24,377,746	24,013,648	I.	364,098	15.1

Thus the exports of all kinds were a little greater this year than last, the increase in wheat just about balancing the decrease in corn. The value of the exports was 13 per cent. greater this year, due to the substitution of high-priced wheat for low-priced corn. The average values per barrel of wheat and flour are less than last year. The wheat exports were nearly twice as great as in July.

For the eight months ending with August there is a decrease of 46,210,000 bushels (81 per cent.) in corn, a decrease of 17,626,000 bushels (21½ per cent.) in wheat, and of 985,000 barrels (19.7 per cent.) in flour. In value there is a decrease of the breadstuffs exports for the eight months of $47,489,500, or 30 per cent.

August will be notable as the month when the tide turned, and also as the time when the leading Atlantic ports again became the leading wheat exporters—a place which for some time had been held by San Francisco. In August, of the total wheat exports 37 per cent. went from New York, 26½ per cent. from Baltimore, 10½ from San Francisco, 9¼ from Philadelphia, 7 per cent. from New Orleans, and 9¾ from all other places.

CHICAGO RAIL SHIPMENTS EASTWARD for the week ending Sept. 7 were 38,106 tons this year, against 63,144 tons in the corresponding week of last year, and 39,051 in 1880, and against shipments at the rate of 37,902 tons per week in the previous ten days of this year. The shipments this year are the largest since April 10, and larger than the average weekly shipments in 1880. The earnings from them must have been about at the rate of $100 this year to $83 last, and $123 in 1880 in September. Of the shipments this year 13.5 per cent. went by the Chicago & Grand Trunk, 25.4 by the Michigan Central, 15.4 by the Lake Shore, 27.3 by the Fort Wayne, 13.3 by the Pan-handle, and 5.1 by the Baltimore & Ohio. The two Vanderbilt roads together carried 40.8 per cent.; the two Pennsylvania roads 40.6 per cent. The share of the Michigan Central was unusually large; that of the Lake Shore unusually small. For the week ending Sept. 16, the rail shipments billed at Chicago (not including those from points west billed through Chicago) were 29,812 tons, against 56,094 in the corresponding week of last year, and 30,057 tons in the previous week of this year. Of the total decrease of 26,282 tons from last year, 2,668 tons were flour and 21,652 tons grain.

THE ERIE seems likely to offer a greater variety of passenger routes between New York and Chicago than any other road. It has been ticketing passengers by way of the Lake Shore, the Grand Trunk and the Michigan Central west of Buffalo, and by way of the New York, Pennsylvania and the Fort Wayne; and now it announces a through line of Pullman sleeping cars by way of Niagara Falls, the Great Western to Paris, the Grand Trunk to Sarnia, and the Chicago & Grand Trunk thence to Chicago, which has been made possible by the union of the Great Western with the Grand Trunk. This will probably be classed as a first-class route, by which rates will be as high as by the New York Central and the Pennsylvania.

When the New York, St. Louis & Chicago is opened, through trains are to run over it and the Erie, and probably trains making as good time as the other lines; and with the opening of the Chicago & Atlantic a passenger route must be established over that. If all the old routes are kept up, the Erie will have seven different routes between New York and Chicago.

THE DISUSE OF IRON RAILS is traced very clearly by the statistics of rail exports from Great Britain. During the eight months ending with August no longer ago than 1880 of the total British exports 102,733 tons (23½ per cent. of all) were iron. This year the iron rail exports had fallen off to 37,959 tons and 7 per cent. of the whole; while the steel rail exports increased from 339,686 tons to 505,017. The United States has until now been the chief importer of British iron rails; but within the last few months we have ceased taking them almost entirely. All countries other than the United States have taken but 17,146 tons during the first eight months of this year, which is but 4⅓ per cent. of their total takings.

NEW PUBLICATIONS.

Colton's Intermediate Railroad Map of the United States.—But a few years ago there was little occasion to consult a map of the United States for places west of the 100th meridian, except for the Pacific coast. Railroads especially were so very few in this vast territory—more than a thousand miles square—that it might be left out of a railroad map without much harm. But all this is changed now. There

is some railroad in every territory. A single company has about 1,200 miles in Colorado, and the capital of that state has become a veritable railroad centre. We especially want a map of this Far West Interior, because it is less familiar to us than the older country; the railroads and the towns are all new.

The want of a map of the whole country has been very well filled by this publication of G. W. & C. B. Colton & Co., the quality of whose work should at this time need no commendation. The infinite pains taken and the extreme conscientiousness exercised by them in endeavoring to attain accuracy are, however, not sufficiently appreciated. The average map-buyer not only does not know, but, we fear, does not much care if a town, or a boundary, or a stream, or a railroad is five or six miles out of the way, or if the crooked railroad is shown to be straight.

Excellencies in this map which are more likely to be appreciated are its neatness, clearness and fine execution, which are not merely gratifying to the taste, but materially lessen the difficulty in searching for and making out places, and other geographical features. The map has the railroads correctly down to a very recent date, but they multiply so fast that any map soon becomes antiquated in this respect.

Bridgman's New Railroad and Township Map of New York.—This is, we believe, the only recent map of New York on a large scale, and for many purposes a large map is almost indispensable. It measures 6 ft. by 5 ft. 6 in. inside of the rules, and is on a scale of five miles to an inch. It is colored to show townships as well as counties, and is intended to cover the latest changes in town and county lines, railroads, etc. The map is made more valuable for consultation by including on the border a map of the city of New York, a small map of the United States, and tables showing the population by the last census of each town, city, and county, and the date of organization and the area of each county, and a table giving the distances from one terminus of each railroad to its chief stations. It is by no means an elegant map, indeed is quite coarsely executed, and the coloring is of the crude kind, painful to the eyes, in which the makers of maps, and especially of cheap maps, seem to delight. We commend to their attention the beautiful tints in Walker's Statistical Atlas, published some ten years ago, and printed by that artist in lithography, Julius Bien.

We find the new railroads generally shown on this map—the whole of the New York, Lackawanna & Western and the New York, West Shore & Buffalo as far west as Weedsport, but not including its Albany branch, which will be one of the first parts put in operation probably, in order that the company may early share the traffic between New York and Albany.

The largeness of this map, and its showing the townships, are its chief recommendations, and for many purposes they make it very convenient.

General Railroad News.

MEETINGS AND ANNOUNCEMENTS.

Meetings.

Meetings will be held as follows:

Louisville & Nashville, annual meeting, at the office in Louisville, Ky., Oct. 4, at 11 a. m. Transfer books closed Sept. 21.

Cumberland Valley, annual meeting, at the office in Harrisburg, Pa., Oct. 2.

Ohio & Mississippi, annual meeting, at the office in Cincinnati, Oct. 12, at 10 a. m. Transfer books close Sept. 25.

Lake Erie & Western, annual meeting, at the office in LaFayette, Ind. Oct. 11, at 2 p. m. Transfer books close Sept. 22.

Boston & New York Air Line, adjourned special meeting, in Middletown, Conn., Oct. 18, to vote on the proposed lease to the New York, New Haven & Hartford Company.

Minneapolis & St. Louis, annual meeting, at the office in Minneapolis, Minn., Oct. 3.

East Tennessee, Virginia & Georgia, annual meeting, in Knoxville, Tenn., Nov. 8. Transfer books close Oct. 14.

Railroad Conventions.

The *Master Car-Builders' Association* will meet in convention, pursuant to adjournment, on Oct. 10, at Niagara Falls.

The Southern Railway Time Convention will meet at No. 46 Bond street in New York, Oct. 18.

The *Association of American Railroad Superintendents* will hold its fourth meeting at No. 46 Bond street, New York, Oct. 18, beginning at 10 a. m.

The *American Society of Mechanical Engineers* will hold its stated annual meeting in New York, Nov. 2. Arrangements for the meeting will be announced hereafter.

Dividends.

Dividends have been declared as follows:

Chicago, St. Paul, Minneapolis & Omaha, 1¾ per cent., quarterly, on the preferred stock, payable Oct. 20. Transfer books close Sept. 30.

East Tennessee, Virginia & Georgia, 1½ per cent. on the income bonds out of the earnings of the past six months, payable Oct. 2.

Foreclosure Sales.

The *Hempstead & New York* road was sold under foreclosure in Brooklyn, N. Y., Sept. 9, and bought for $10,450 by Herbert Anstey. It is said that the purchase is for account of the Stewart estate, and that the line will be used as a cross-cut from Garden City to Rockaway and other points on the south shore of Long Island. The road is 5½ miles long, from Hempstead, N. Y., to Valley Stream on the Brooklyn & Montauk road. It has not been worked for some time. The bonded debt of the old company was $64,300.

Association of American Railroad Superintendents.

The fourth meeting of this Association will be held at the rooms of the National Railway Club, No. 46 Bond street, New York city, on Wednesday, Oct. 18, 1882, at 10 o'clock a. m.

Business to come before the meeting:

1. The election of honorary or other members.
2. The election of officers for the ensuing year.
3. Reports from committees (train rules and signals, and honesty of conductors).
4. Unfinished business.
5. The consideration of such other business as may be presented.

The important subjects to be discussed at this meeting should insure a full attendance.

Superintendents who have signified their intention of becoming members of the association are invited to be present at this meeting.

The proprietors of the Grand Central Hotel, Broadway, opposite Bond street, have kindly consented to make a discount to members of the association, of 50 cents per day from their regular charge of $3, $3.50, $4 and $5 per day (according to location of rooms).

Brotherhood of Locomotive Engineers.

The St. Louis *Republican*, of Sept. 17, says: "A special meeting of the Brotherhood of Locomotive Engineers has been in session two days at Engineers' Hall on Chouteau avenue. The organization embraces representatives from all the roads west of the Mississippi River controlled by the Gould syndicate. Among the roads represented are the St. Louis & Iron Mountain, the Missouri Pacific, the Texas & Pacific, the Missouri, Kansas & Texas, the St. Louis & San Francisco and the Wabash.

"The engineers have a grievance to make known and, as stated by one of their number, they meet for the purpose of determining what shall constitute a day's work for a locomotive engineer and what pay he should receive for a day's work, as at present there is no stated day's work and no stated day's pay. They come when sent for and go when relieved, and are paid whatever the corporations feel disposed to pay them. The meeting has been discussing the matter with a view to preparing a petition to be presented to the officials in charge of the roads represented, setting forth their demands and the purpose which called them together. There are already 36 representatives here from nine divisions and two more are expected by Monday morning."

Brotherhood of Locomotive Firemen.

The annual convention of the Brotherhood of Locomotive Firemen at Terre Haute, Ind., continued in session about five days, until Sept. 16. The meetings were private. It was decided to hold the next convention in Terre Haute, Ind., in the second week of September next year.

Master Car-Builders' Association.

The following circular from the President, L. Garey, is issued, dated New York, Sept. 15:

"An adjourned meeting of the Master Car-Builders' Association will be held in the International Hotel, at Niagara Falls, at 10 a. m., on Oct. 10, to which all railroad companies are requested to send representatives. From Section 2, of Article III., of the Constitution, which will be found with this circular, it will be seen that every master car-builder is entitled to active membership. Section 3 gives the privilege to every railroad company of appointing a *representative member*. In most cases, no doubt, the master car-builder will be the most suitable person to appoint, but should there be reasons for sending anyone else, it is hoped that the master car-builder will also attend the meetings, as it is of the utmost importance that the deliberations and the action of the Association should be controlled by experienced and practical men.

"It is also believed that few master car-builders can fail to be benefited by the discussions at the meetings, and by intercourse with persons engaged in the same occupation as themselves. At such meetings new ideas are received, prejudices are removed, and those who attend them go home better educated and better fitted to perform their duties.

"The coming meeting is regarded as a very important one, as the Constitution will then be revised, and the success of the Association in improving the construction of cars and making their parts uniform and interchangeable will depend very much upon the extent to which railway companies co-operate in the meeting referred to.

"It should be explained, perhaps, that the action of the Association is not intended to be in any way binding upon its members, but is only recommendatory in its character, the object of meeting together being simply to bring about agreement among those who take part in the proceedings concerning the construction of cars, and to establish rules for the adjustment of the complicated relations growing out of the interchange of freight cars among railroads in all parts of the country.

"The amount of the annual contribution of each member, for defraying the expenses of the Association, is assessed each year, and heretofore has always been $5. From Section 3, of Article III., as amended at the last meeting, it will be seen that the annual "dues of Representative Members shall be in proportion to the whole number of votes they are entitled to cast." The total expenses of the Association have heretofore been less than $500 per year.

"You will notice that a *written* appointment is required for representative members. A suitable blank is therefore inclosed, which should be filled up, and must have the signature of the President, General Manager, or General Superintendent of your road, and should be presented to the Secretary of the Association at the meeting to be held Oct. 10. It is hoped that your company will be represented at that meeting."

EXTRACT FROM CONSTITUTION.

"ARTICLE III.—Sec. 1. There shall be three classes of members, Active, Representative and Associate members.

"Sec. 2. Any person holding the position of Superintendent of the Car Department, Master Car-Builder, or Foreman of a railroad car shop, or one representative from each car manufacturing company, may become an active member by signing the Constitution, or authorizing the President or Secretary to sign for him, and paying his dues for one year.

"Sec. 3. Any person having a practical knowledge of car construction may become a representative member, by receiving a *written* appointment from the President, General Manager or General Superintendent of any railroad company, to represent its interests in the Association.

"Provided that no representative member shall represent more than one railroad company. Such members shall have all the privileges of active members, and in addition thereto, on all measures pertaining to the adoption of standards for car construction, or the expenditure of money, they shall each have one more vote for each thousand cars the company they represent owns. No railroad company shall have more than one representative member. In the enumeration of four, six or twelve-wheeled cars, four axles to count as one car. The dues of representative members shall be in proportion to the whole number of votes they are entitled to cast. Their membership shall cease if their appointment is revoked by any officer authorized to make it, or when such a member leaves the employ of the company by which he was appointed.

"Sec. 4. Civil and mechanical engineers, and others whose qualifications and experience may be valuable to the Association, may become associate members when recommended by a supervisory committee. All associate members must be elected by ballot at a regular meeting, and five dissenting votes shall reject. Associate members shall be entitled to all privileges of active membership except the privilege of voting.

"Sec. 5 All members will be subject to annual dues to defray the necessary expenses of the Association, as decided at each annual meeting; and each one signing, or causing to be signed, the Constitution, will be considered a member until he voluntarily resigns. But all members who are two years or more in arrears for annual dues shall have no voice in the meetings until such arrears are paid."

ELECTIONS AND APPOINTMENTS.

Ashland, Montreal River & Ontonagon.—The following are the officers of this company: President, S. S. Vaughn; Vice-President, Samuel S. Fifield; Secretary, Thomas Bardon; Treasurer, N. D. Moore; Solicitor, W. M. Tompkins. Office at Ashland, Wisconsin.

Burlington & Missouri River in Nebraska.—Taking effect Sept. 15, Mr. James M. Barr is appointed Purchasing Agent in place of Mr. George Hargreaves, resigned to go into other business.

Chicago, St. Paul, Minneapolis & Omaha.—The following appointments have been made to take effect Sept. 11: T. E. Clarke, Assistant Superintendent, St. Paul Division; H. B. Magill and Geo. Noble, Train Dispatchers.

Connotton Valley.—Mr. Samuel Briggs is appointed General Manager in place of W. W. Hungerford, resigned. Mr. Briggs was recently General Superintendent of the Valley road.

Illinois, Iowa & Minnesota.—The directors of this new company are: E. H. Thayer, Clinton, Ia.; A. Campbell, A. Meanes, La Salle, Ill.; E. Baldwin, Farm Ridge, Ill., E. Evans, Ralph Plumb, Streator, Ill.; J. D. Harvey, Chicago.

Indianapolis & St. Louis.—The directors of this new company, successor to the old Indianapolis & St. Louis Company, are: James Barret, Stevenson Burke, J. H. Devereux, J. T. Dye, George H. Russell, E. B. Thomas, Amos Townsend. They are all connected with the Cleveland, Columbus, Cincinnati & Indianapolis Company.

Marshall & Northwestern.—Mr. W. W. Heartsell is President, and W. Kip Chief Engineer. Office in Marshall, Texas.

Mexican National.—The following circular is dated Sept. 1:

"Mr. George A. Sanderson is appointed General Freight and Passenger Agent of the Northern Division, to take effect this date, with headquarters at Laredo, Texas."

Mr. Sanderson was recently General Agent of the Denver & Rio Grande in Chicago.

Missouri Pacific.—Mr. M. L. Sargent having resigned the position of Assistant General Freight Agent of this company at Atchison, Kan., his duties and authority are assigned to Mr. W. E. Jones, General Western Freight Agent, whose office will be hereafter at Atchison instead of Kansas City.

Mobile & Girard.—Mr. W. G. Raoul has been chosen President in place of Wm. M. Wadley, deceased.

Montana.—The officers of this new company are: President, Samuel Word, Butte, Montana; Vice-President, E. T. Hulonisky; Secretary, George W. Irvin; Treasurer, J. W. Gannett; Chief Engineer, J. Blickensderfer. The company is controlled by the Union Pacific.

Nashville, Chattanooga & St. Louis.—At the annual meeting in Nashville, Sept. 13, the following directors were chosen: James D. Porter, J. W. Thomas, Thomas W. Evans, Thomas O'Conner, G. M. Fogg, A. S. Colyar, Nashville, Tenn.; Thomas Lipscomb, Thomas C. Whitesides, Shelbyville, Tenn.; John W. Childress, E. L. Jordan, Murfreesboro, Tenn.; Milton H. Smith, G. A. Washington, Louisville, Ky.; J. H. Inman, Henry Earle, Vernon K. Stevenson, New York. The new directors are Messrs. Colyar, Smith and Inman, who succeed E. P. Alexander, C. C. Baldwin and H. C. Murrell. The board met and re-elected James D. Porter, President; J. W. Thomas, General Superintendent; R. C. Bransford, Treasurer; R. C. Morris, Resident Engineer; J. D. Maney, General Bookkeeper.

New York, Chicago & St. Louis.—Mr. E. E. Dwight is appointed Superintendent of this road, with headquarters at Cleveland, O. Appointment took effect Sept. 13.

Northern Pacific.—Mr. Paul Schulze is appointed General Land Agent of the Western Division, with office in Portland, Oregon.

Ohio Central.—At the annual meeting in Toledo, Sept. 13, the old directors were re-elected. The board is now as follows: Term expires 1883, M. D. Carrington, J. E. Martin, Toledo, O.; C. S. Brice, Lima, O.; Samuel Thomas, Columbus, O. Until 1884, Charles Foster, Fostoria, O.; H. T. Terrill, Cleveland, O.; Joseph S. Miller, Charleston, W. Va.; T. J. French, New York. Until 1885, Daniel P. Eells, Cleveland, O.; J. T. Martin, George I. Seney, Brooklyn, N. Y.; Samuel Shethar, New York.

Pennsylvania.—Additional information in relation to the changes and appointments noted last week is as follows:

The duties of Third Vice-President Joseph N. DuBarry will be the supervision of the construction of new lines and of all engineering questions. Fourth Vice-President John P. Green will be charged with the supervision of the operations of the company's lines west of Pittsburgh.

Mr. E. T. Postlethwaite is appointed assistant to Second Vice-President Frank Thomson.

Mr. John S. Wilson is appointed General Freight Agent to succeed Mr. J. McC. Creighton. Mr. Wilson has been General Freight Agent of the Philadelphia, Wilmington & Baltimore.

The organization of the Motive Power Department is now as follows: General Superintendent of Motive Power, Theodore N. Ely. Superintendent of Motive Power, Pennsylvania Railroad Division, Frank L. Sheppard; Superintendent of Motive Power, United Railroads of New Jersey Division, H. S. Hayward; Superintendent of Motive Power, Philadelphia & Erie Division, R. H. Soule.

Minor changes consequent upon these are: Alfred Waters to be Superintendent Sunbury, Hazleton & Wilkesbarre Division in place of Frank L. Sheppard, transferred; Robert L. Holliday to be Principal Assistant Engineer of Maintenance of Way, Pennsylvania Railroad Division, in place of James Reed, made Superintendent of the Altoona Division. Mr. Walters was recently Assistant Engineer of Motive Power, and Mr. Holliday Assistant Engineer of the Pittsburgh Division.

St. Mary's Ship Canal.—Mr. E. S. Wheeler, of Detroit, has been appointed General Superintendent, with office at Sault Ste. Marie, Mich. Mr. Wheeler has been connected with the Coast Survey, and is an engineer of experience.

Sparta, Chester & St. Louis.—The officers of this new company are: President, Henry Seligman, New York; Vice-President and Managing Director, Robert Roseborough, Sparta, Ill.; Treasurer, Robert Johnston, Newark, N. J.; Secretary, Alfred Wild, New York.

Valley, of Ohio.—Mr. J. E. Turk, Chief Engineer, has been appointed General Superintendent also, in place of Samuel Briggs, who has gone to the Connotton Valley road.

Wheeling & Lake Erie.—Mr. M. D. Woodford is appointed General Superintendent, with office in Toledo, O. He was recently General Manager of the Ft. Wayne & Jackson, and has been connected with the Michigan Central and the Canada Southern.

Mr. James M. Hall is appointed General Passenger Agent, and Mr. A. G. Blair General Freight Agent, with offices in Toledo. Mr. Hall was recently Eastern Agent of the Wabash, and Mr. Blair was Toledo Agent of the same road.

PERSONAL.

—Mr. Samuel Briggs has resigned his position as Superintendent of the Valley Railroad, of Ohio.

—Mr. M. L. Sargent has resigned his position as Assistant General Freight Agent of the Missouri Pacific at Atchison.

—Mr. W. W. Peabody, General Superintendent of the Ohio & Mississippi road, was recently elected Vice-President of the Cincinnati Chamber of Commerce.

—Mr. George Hargreaves, Purchasing Agent of the Burlington & Missouri River Railroad in Nebraska, resigned his position Sept. 15, and will go into other business.

—Mr. C. Wrenshall has resigned his position as Master of Road of the St. Paul, Minneapolis & Manitoba road. He has seen long service on this road, the Rock Island, the Cincinnati Southern and other roads.

—Mr. Lewis Ross, for a number of years a prominent director of the Midland Railway Company of Canada, died at Port Hope, Ont., Sept. 20. He represented his district in the Canadian parliament for some time.

—Gen. T. P. Rosser, formerly Chief Engineer of the Northern Pacific, and more lately of the Canadian Pacific, has undertaken to make the surveys of the projected line from Winnipeg, Man., to Hudson Bay.

—Dwight S. Lathrop, for some time a confidential clerk in the New York office of the Central Railroad of New Jersey, and a nephew of the late Receiver, has disappeared, and it is said that he has embezzled about $20,000 by falsifying his books.

—Mr. W. W. Hungerford has resigned his position as General Manager of the Connotton Valley road. He served as Superintendent of the Ogdensburg & Lake Champlain and the Texas-Mexican roads before going to the Connotton Valley, on which road he has been only a few months.

—Mr. Wm. B. Getchell, for many years Master Car Painter of the Eastern Railroad, recently resigned to accept a position on the New York, New Haven & Hartford road. Mr. Getchell was last week presented with a handsome watch by his former associates on the Eastern road.

—Mr. Robert Gunn, who was recently promoted from the position of Foreman of the Salamanca shops of the New York, Lake Erie & Western to be Master Mechanic at Hornellsville on the same road, was last week presented with a valuable gold watch by the employés formerly under his charge.

—In accepting the resignation of Mr. A. J. Cassatt as First Vice-President, the directors of the Pennsylvania Railroad Company adopted the following:

"*Resolved*, That the resignation of Mr. Cassatt be accepted, to take effect Oct. 1 next, and in accepting his resignation the board desire to place upon record their hearty concurrence in the views expressed by the President, and their thorough appreciation of the able, faithful and zealous discharge by Mr. Cassatt of the responsible and onerous duties that have devolved upon him during his long connection with this company, and the pleasure they have in the assurance that in the future, as in the past, everything tending to promote the welfare and prosperity of this company will receive from him his earnest and cordial support."

TRAFFIC AND EARNINGS.

Railroad Earnings.

Earnings for various periods are reported as follows:

	1882.	1881.	Inc. or Dec.	P. c.
Eight months ending Aug. 31:				
Ala. Gt. Southern..	$497,381	$472,017	I. $24,364	5.1
Cairo & St. Louis...	236,716	274,611	D. 37,895	13.7
Gulf., Col. & S. F...	720,711	541,077	I. 179,634	33.2
Lake Erie & West...	933,361	917,212	I. 16,149	1.7
Mar., Houg. & Ont.	861,113	581,989	I. 279,124	48.0
Ohio Central.....	625,753	400,031	I. 225,722	56 4
Peoria, Dec. & Ev..	516,022	430,576	I. 85,446	19.8
Vicks. & Mer.....	272,219	....	.....	...
Seven months ending July 31:				
Oregon Improv. Co.	$1,495,345	.....	.....	...
Month of July:				
Oregon Improv. Co.	$268,132	.....	.....	....
Month of August:				
Ala. Gt. Southern..	$73,794	$68,187	I. $5,607	8.2
Buff., Pitts. & W...	90,600	72,000	I. 18,600	25.8
Cairo & St. Louis...	32,558	34,677	D. 2,109	6.1
Connotton Valley..	31,911	.....	.....	....
Gulf., Col. & S. F..	138,791	100,729	I. 38,062	37.7
Lake Erie & West..	169,715	167,164	I. 2,551	1.5
Mar., Houg. & Ont..	183,000	155,000	I. 28,000	18.0
Ohio Central	184,195	70,014	I. 114,181	163.1
Peoria, Dec. & Ev..	75,724	86,250	D. 10,526	12.2
Vicks. & Mer.....	27,200	32,664	D. 5,464	16.7
First week in September:				
Chi. & Grand Tr...	$50,672	$31,358	I. $19,314	61.5
Grand Trunk.....	346,647	315,196	I. 31,451	10.0
Second week in September:				
Chi. & Northwest..	$546,754	$482,399	I. $64,355	13.4
Chi., St. P., M. & O.	103,832	82,832	I. 21,000	25.3
Denver & R. G....	145,855	129,362	I. 16,493	12.8
Hann. & St. Jo.....	59,000	50,200	I. 8,800	17.5
Long Island.....	64,120	55,038	I. 9,082	16.5
Louisv. & Nash....	246,395	226,700	I. 19,695	8.7
Northern Pacific...	180,100	101,290	I. 78,810	77.8
St. L. & San. Fran.	80,600	65,800	I. 14,800	22.3
St. P., Minn & Man.	436,000	400,637	I. 35,363	8.8
Wab., St. L. & P...	436,917	417,345	I. 19,572	4.7

Grand Trunk earnings include those of the former Great Western road.

Grain Movement.

For the week ending Sept. 9 receipts and shipments of grain of all kinds at the eight reporting Northwestern markets and receipts at the seven Atlantic ports have been, in bushels, for the past seven years:

Year.	Northwestern receipts.	Northwestern shipments.—Total.	By rail.	P. c. by rail.	Atlantic receipts.
1876....	3,512,610	4,657,952	1,698,318	36.3	3,607,278
1877 ..	5,751,856	4,893,113	1,024,304	20.9	4,927,774
1878....	6,397,260	5,813,414	1,022,581	17.6	8,249,026
1879....	6,857,719	5,592,939	1,358,966	24.3	7,305,083
1880....	5,531,985	5,155,991	1,504,145	29.2	7,401,178
1881....	7,126,934	5,974,490	2,436,514	40.8	5,455,927
1882...	5,876,002	5,276,710	2,197,530	41.7	4,923,294

The receipts of the Northwestern markets were 1,250,000 bushels less than in the corresponding weeks of last year, and less than in 1878 and 1879, but larger than in the other years; they were 2,184,000 bushels less than the previous week this year, however. The shipments of these markets are about 700,000 bushels less than last year, and smaller than in 1878 and 1879. The rail shipments were a little less than last year, but larger than in previous years, and a larger proportion of the whole than last year even. The shipments down the Mississippi were 269,216 bushels, or 5.1 per cent. of the whole. The Atlantic receipts are smaller than in any corresponding week since 1876; they are also nearly 1,900,000 bushels less than in the previous week this year, and are the smallest since July.

Of the Northwestern receipts for the week Chicago had 53.6 per cent. of the whole, St. Louis 15.3, Toledo 13.9, Peoria 6.3, Detroit 4.3, Milwaukee 3 8, Cleveland 2.1, and Duluth 0.7 per cent. Of the total decrease of 2,184,000 bushels from the previous week, 1,322,000 was at Chicago, 520,000 at St. Louis, and 253,000 at Peoria. There is a slight increase at Milwaukee, but not enough to indicate that it had began to feel the new crops of spring wheat.

Of the Atlantic receipts for the week New York had 50.3 per cent., Baltimore 17, Philadelphia 10, Boston 8 3, Montreal 7.3, New Orleans 6.9, and Portland 0.2 per cent. Of the decrease of 1,887,000 bushels from the previous week, 1,007,000 must have been at New York, 477,000 at Baltimore, and 506,000 at Baltimore, while there was a gain of 130,000 at Boston, where the receipts were the largest for four months. About two-thirds of the total Atlantic receipts were wheat, and more than a quarter were oats, and less than 9 per cent. was corn, while last year 42 per cent. was corn, 48 per cent. wheat, and less than 9 per cent. oats.

Of the exports for this week, 42.3 per cent. was from New York, 28.8 from Baltimore, 16.8 from Montreal, 5.2 from Philadelphia, 3.6 from New Orleans, and 3.3 from Boston.

During the week ending Sept. 13 the Atlantic exports were 2,918,585 bushels of grain and 157,187 barrels of flour this year, against 2,569,633 bushels and 91,108 barrels in 1881, and 5,348,537 bushels and 77,582 barrels in 1880.

For the week ending Sept. 16 receipts and shipments at Chicago and Milwaukee were:

	Receipts.— 1882.	1881.	Shipments.— 1882.	1881.
Chicago.....	2,939,813	3,980,696	2,874,523	3,826,121
Milwaukee.....	276,485	514,528	99,544	222,469
Both	3,216,298	4,495,224	2,974,067	4,058,590

There is a decrease of 1,279,000 bushels in the receipts, and of 1,084,000 in the shipments. The receipts at Milwaukee do not yet show much effect from the spring wheat crop.

For this week ending Sept. 16 receipts and shipments at Buffalo were:

	Receipts.— 1882.	1881.	Shipments.— 1882.	1881.
By rail.....	861,000	2,711,000	1,094,000	1,427,500
By water.....	1,557,200	628,300	965,000	1,178,340
Total.....	2,418,200	3,339,300	2,059,000	2,605,840

The rail receipts are not one-third, but the lake receipts are two and a half times what they were last year. The rail shipments have decreased 23 per cent., and the canal shipments 18 per cent.

For the week ending Sept. 16 receipts at four Eastern ports for three years have been:

Bushels:	New York.	Boston.	Phila.	Baltimore.	Total.
1882.. ..	2,821,302	467,305	457,900	674,700	4,421,207
1881.....	3,358,798	414,668	588,905	621,740	4,984,111
1880.....	2,619,836	400,027	691,400	734,234	4,445,497
P. c. of total:					
1882. ...	63.8	10.6	10.4	15.2	100.0
1881....	67.4	8.3	11.8	12.5	100.0
1880.....	58.9	9.0	15.6	16.5	100.0

Philadelphia and Baltimore together had 25.6 per cent. of the whole this year, against 24.3 last year and 32.1 in 1880.

Of the New York receipts 1,787,853 bushels (63.2 per cent.) were by rail this year, against 1,962,594 bushels (58.4 per cent.) last year.

Receipts and shipments of wheat, corn and oats weekly since July have been:

	Receipts.— Wheat.	Corn.	Oats.	Shipments.— Wheat.	Corn.	Oats.
Aug. 7...	1,784,228	1,004,752	318,235	2,248,733	955,051	442,577
Aug. 14...	906,261	1,087,498	535,130	1,332,449	955,102	492,523
Aug. 21...	1,188,833	1,370,026	1,372,098	1,297,303	1,185,078	883,174
Aug. 28...	1,893,983	1,543,256	1,908,715	1,243,804	1,246,792	1,644,622
Sept. 4...	2,424,120	1,649,956	1,991,700	1,820,105	1,361,477	1,573,383
Sept. 11...	2,245,314	1,437,744	1,168,715	1,304,3 7	701,007	1,463,396
Sept. 18...	2,128,277	1,219,105	896,459	1,797,394	1,233,469	966,963

The receipts in the last week are smaller than in either of the three previous weeks, but the shipments are much larger than the week before.

Crops.

The National Department of Agriculture reports that the general condition of winter and spring wheat when harvested was 100 per cent. of a full crop. Considerable damage was done by rain in Michigan and Northern Indiana to winter wheat, and there was some loss of spring wheat in Wisconsin from the same cause. The crops of Ohio, Indiana and Illinois are estimated at about 140,000,000, which is nearly as much as the great crops of 1879 in those states. The Department estimates the aggregate yield of winter wheat as about 380,000,000 bushels, and of spring wheat 140,000,000 bushels. There have not been sufficient tests of the latter by threshing to make the estimate very close.

The crop of 1880 was 498,500,000 bushels; which was 9.94 bushels per head of population. The population now must be just about 53,000,000, and a yield of 520,000,000 is 9.81 bushels per head. The consumption for seed is usually more than 10 per cent. of the total crops, but it will, of course, depend upon acreage sown. There was no more this year than in 1880; but there will certainly be a large increase of acreage in many of the states next year—especially in Minnesota and Dakota, and probably in Kansas and Nebraska; and there is usually an increase of acreage wherever the crop has turned out well.

Per mile of railroad the yield in 1880 was about 5,540 bushels; this year it is 4,730.

The spring wheat harvest in Dakota and Minnesota has been completed without disaster, and threshing is now general; but there are few definite reports of the results, and there is apparently little of this wheat coming forward. Its movement will be shown by increased receipts at Milwaukee and Duluth, and also at Chicago. A very large portion of this wheat is ground at Minneapolis, however, and of this we get no reports.

The Kansas State Board of Agriculture estimates the crop of oats in that state as 18,300,000 bushels, against 8,754,000 in 1881. There were but 137,000 acres of spring wheat, which it estimates to have yielded 2,055,000 bushels (15 bushels per acre). The yield of corn, which in Kansas is out of the way of frost, it estimates at 155,000,000 bushels. The yield was but 76,400,000 bushels last year and 106,200,000 in 1880.

The Department of Agriculture reports the condition of cotton on the 1st of September as 92 per cent. of a good condition, which is the same as in 1880 (when the crop was largest) and better than in any other year since 1871. The acreage is considerably less than last year, however. The condition fell from 94 to 92 during August this year, but last year in that month it fell from 88 to 70. Though cotton picking is general now, the yield will be modified considerably by the weather, which may be favorable or unfavorable from the maturing of what is known as the "top crop," and for picking. The condition was 101 in Texas, 100 in Arkansas, 89 in Louisiana, 88 in Mississippi, 90 in Alabama, 89 in Georgia, 83 in Florida, 95 in South Carolina, 88 in North Carolina, 90 in Virginia, and 89 in Tennessee.

The Department reports the average condition of corn Sept. 1 as 83, the same as Aug. 1. Last year the condition fell from 77 to 60 during August, but in September, 1880, the condition was 91. The Department says that, "If early frosts do not injure the crop the product will be materially larger than last year, but the heavy production of 1879 and 1880 cannot be approached under the most favorable circumstances."

The condition of corn in September was very low east of Ohio, and it depreciated greatly during August, on account of drouth. South of Pennsylvania and the Ohio River the corn is everywhere excellent, the condition being 100 or more.

Coal Movement.

Coal tonnages reported for the week ending Sept. 9 are as follows:

	1882.	1881.	Inc. or Dec.	P.c.
Anthracite... 408,394	595,264	D. 186,870	31 4
Semi-bituminous 106,471	97,147	I. 9,324	9.6
Bituminous, Pa.....	64,834	52,596	I. 12,238	23.1
Coke, Pa.....	51,745	37,286	I. 14,450	39.0

The anthracite market is improving. The companies were working on short time last week.

The market for semi-bituminous coals is steady, although Cumberland coal is beginning to come forward in large quantities again.

Anthracite coal tonnages for August and the eight months ending August 31 are given as follows in the Official Accountant's statement, which differs somewhat in form from the weekly reports:

	August.— 1882.	1881.	Eight months.— 1882.	1881.
Phila. & Reading....	694,409	707,819	4,154,582	4,272,486
Lehigh Valley.....	576,512	530,607	3,744,947	3,521,043
Central of N. J.....	412,371	367,471	2,816,816	2,577,517
Del., Lacka. & West.	482,926	417,958	2,943,319	2,748,313
Del. & Hud. Can. Co..	296,583	305,638	1,958,886	2,007,682
Penn. R. R. Co.....	243,941	200,146	1,519,230	1,440,586
Penn. Coal Co.....	160,978	161,125	917,361	892,994
N. Y., L. E. & W....	26,982	42,783	164,662	312,523
Total.....	2,894,702	2,733,547	18,219,803	17,773,144

Increase for the month, 161,155 tons, or 5.9 per cent. Four companies—the Reading, the Delaware & Hudson, the Pennsylvania Coal Company and the Erie, show decreases. Increase for the eight months, 446,659 tons, or 2.5 per cent. The Reading, the Delaware and Hudson and the Erie show decreases, the other five companies have gained on last year.

The stock of coal on hand at tidewater shipping points Aug. 31 was 603,042 tons, against 575,532 tons July 31, an increase of 27,510 tons during the months.

The coal tonnage of the Pennsylvania Railroad for the week ending Sept. 9 was: Coal, 153,517; coke, 51,745; total, 205,262 tons. The total tonnage this year to Sept. 9 was 7,527,000 tons.

Actual tonnage passing over the Pennsylvania & New York road for the nine months of its fiscal year from Dec. 1 to Sept. 2 was as follows:

	1882.	1881.	Inc. or Dec.	P.c.
Anthracite.....	802,303	772,717	I. 29,586	3.8
Bituminous.....	269,726	320,199	D. 50,473	15.7
Total.....	1,072,029	1,092,916	D. 20,887	1.9

The larger part of the anthracite comes from the Lehigh Valley road.

The coal tonnage of the Chesapeake & Ohio Railroad for the eight months ending Aug. 31 was as follows:

	1882.	1881.	Increase.	P.c
Coal.....	557,374	482,157	75,217	15.6
Coke.	60,026	49,219	10,807	22.1
Total.....	617,400	531,376	86,024	16.2

The August tonnage was 84,130 tons, of which 19,336 tons were shipped by sea from Richmond, and 24,596 tons from Newport News.

San Francisco coal receipts for the eight months ending Aug. 31 were 545,100 tons, against 547,600 tons last year, a decrease of 2,500 tons, or 0.5 per cent.

Cumberland coal tonnage for the week ending Sept. 16 was 44,725 tons. Of the tonnage from the mines 29,344 tons passed over the Cumberland & Pennsylvania road, 10,293 tons over the George's Creek & Cumberland, and 5,053 tons over the West Virginia Central & Pittsburgh. The total tonnage this year to Sept. 16 was 767,296 tons.

New Chicago Traffic Contracts.

The Chicago & Northwestern, the Chicago, Milwaukee & St. Paul and the Chicago, Rock Island & Pacific companies, having been unable to make a division of the St. Paul-Minneapolis business, have made a contract to maintain rates at these places and at all competing points between Des Moines and St. Paul. They appoint a joint Commissioner (Mr. Geo. L. Carman) whose duty will be to see that the agreement is kept, and who will have power to inflict fines for the violation of it. With this agreement made, the St. Paul enters the Iowa Trunk Line Association, and is to receive an equal share of the Chicago-Council Bluffs traffic, which will be one-fourth of the whole until the Wabash's line is completed (which will be very soon now), and one-fifth afterward.

A later dispatch, however, from Chicago, Sept. 20, says: "A war on rates, both passenger and freight, to the Northwest is thought to be imminent. This morning the passenger agents of the Chicago & Northwestern, Milwaukee & St. Paul, Chicago, Burlington & Quincy, and Chicago, Rock Island & Pacific Railroad companies held a meeting, at which an agreement for the pooling of the passenger traffic between Chicago and St. Paul and Minneapolis was presented. The Northwestern & St. Paul roads demanded the insertion of a clause prohibiting the payment of commissions. The other roads, having longer routes, refused to accede to the demand, and the meeting adjourned without reaching any arrangement. In the afternoon the general managers and freight agents of the same lines met to consider the freight pool. Mr. Merrill, of the Milwaukee & St. Paul road, declined to enter into any arrangement in regard to the freight traffic until the passenger traffic question was settled, and the meeting adjourned. Unless an agreement is at once reached it is believed that a war will break out, not only between the points named, but throughout Minnesota and Iowa, and as far west as Omaha."

Tricks of the Trade.

At a recent meeting of the Standing Committee of the Joint Executive Committee, Mr. Fink reported that he had positive evidence that the Louisville, New Albany & Chicago Railroad had taken grain from Greencastle, Ind., billing and pro-rating the same as from Louisville, Ky.; also that the United States Mail Line had billed from Madison, Ind., wheat which came from non-pro-rating points on the Ken-

tucky River, and which should have paid the full tariff rate from Cincinnati. As in both cases the connecting roads were deprived of part of their legitimate revenue, it was agreed that the Commissioner should request the Louisville, New Albany & Chicago Railroad and United States Mail Line to explain their action in the cases referred to, and give guarantee that the practice will be stopped and agreed rates maintained in the future; and if they fail to do so, the roads represented on the Joint Executive Committee shall cease pro-rating arrangements and the interchange of business and through cars with them, in accordance with action of Joint Executive Committee, July 26.

Chicago-St. Louis Pool.

It is reported that at a meeting of the managers of the roads interested in the freight traffic between Chicago and St. Louis in Chicago Sept. 13, it was agreed to divide the business as follows: Chicago & Alton, 36 per cent.; Wabash, 29; Illinois Central, 20; Chicago, Burlington & Quincy, 15. This apportionment is to hold good for six months, when a revision may be demanded.

Southern Illinois Pro-rating Points.

The Standing Committee of the Joint Executive Committee has adopted the recommendations of a special committee appointed at the July meeting, which makes the rates from Carmi, Eldorado, Mount Carmel, Wabash, Grayville and Brown, Ill., Princeton and Mt. Vernon, Ind., are made 108 per cent. of the Chicago rate, the divisions being based on Evansville distances.

THE SCRAP HEAP.

Locomotive Building.

The Mason Machine Co. at Taunton, Mass., has a number of orders for locomotives on hand, besides much work in the other shops.

The Matthews steam spring packing has recently been put on 14 locomotives on the New York & New England road. Orders have also been received from the Central Vermont, the Reading and other roads.

The Manchester Locomotive Works in Manchester, N. H., are working steadily, with several orders to be filled.

The Old Colony Railroad shops in Boston are about to build a new heavy passenger engine to run on the steamboat express train between Boston and Fall River. The new engine will be called the "Pilgrim," and will take the place of the old "Pilgrim," which has just been broken up, and which was one of the first engines to run the steamboat train, nearly 30 years ago.

Car Notes.

The South Florida Railroad shops at Sanford, Fla., are building a number of freight cars for the road.

The Jackson & Sharp Co. at Wilmington, Del., has just finished an equipment of passenger coaches, baggage, smoking an express cars for the Pittsburgh, Chartiers & Youghiogheny road. The company is now at work upon a number of large contracts, and is answering inquiries daily for coaches to be delivered during the winter and spring.

About noon on Sept. 16 the Lynch street shops of the Missouri Car & Foundry Co. in St. Louis caught fire from some unknown cause. The fire started in the engine room and spread very rapidly, while the city fire department was able to do little on account of a short supply of water. The buildings were not especially valuable, but the fire destroyed the tools and machinery and a large stock of seasoned lumber. The loss is estimated at $175,000, and there was a large insurance on the property.

The Harlan & Hollingsworth Co., in Wilmington, Del., has a number of orders for passenger and baggage cars on hand. There is also much work on hand outside of the car shops.

Bridge Notes.

The Massillon Bridge Co. at Massilon, O., has taken a contract for a combination bridge 400 ft. long, over the Scioto River in Columbus, O., for the Indiana, Bloomington & Western.

The King Iron Bridge Co., in Cleveland, O., has lately completed six spans for the New York, Lackawanna & Western road, besides a number of highway bridges. The shops have also turned out a large amount of iron work for buildings, including that for the New York, Pennsylvania & Ohio station in Cleveland.

Iron and Manufacturing Notes.

The Allentown Rolling Mills, successor by reorganization to the Allentown Rolling Mill Co., are prepared to supply iron rails from 16 lbs. per yard upward; fish-plates, bolts and nuts; spikes and rivets, the "Allentown" shafting, bar iron of all sizes and angle-iron. They also make cast-iron turntables. These works are represented by C. W. Leavitt, General Agent, whose office is at No. 161 Broadway, New York.

The Roane Iron Co. have orders enough ahead to keep running full on single turn. Demand for rails is not heavy, but, judging from a moving tendency in pig iron, orders will soon be heavy enough for the usual tall double turn of hands.—*Chattanooga (Tenn) Tradesman.*

The Lebanon Iron Co. is building a new rolling mill in Lebanon, Pa. At first only bar iron will be made.

The blast furnace of the Crozier Iron & Steel Co., at Roanoke, Va., is approaching completion. It is expected to make 100 tons of pig iron a day. The company has bought the Cripple Creek ore banks in Wythe County, Va., and owns other lands and ore-rights.

The furnace of the Ridge Valley Iron Co. near Hermitage, Ga., is in blast, making charcoal car-wheel iron.

Bass Furnace at Godwin, Ala., is in blast, making 25 tons of pig iron a day.

The Shelby Iron Works near Columbiana, Ala., have their furnace in blast, making a high grade of iron.

The rolling mill and foundry at Briarfield, Ala., have passed into the hands of St. Louis parties, and are being put in order ready to start up.

The forge at Powerville, N. J., is to be started up shortly. It will make horse-shoe iron.

The rail mill of the Pittsburgh Bessemer Steel Works at Homewood, Pa., has been started up, and the entire works were to be in operation this week.

There are 51 completed rolling mills and steel works in Pittsburgh and Allegheny County, and 2 building. Of these, 8 are rail mills, 6 making only light rails; 12 are crucible steel works; 1 makes cemented steel only; 3 are Bessemer steel works, 7 are open-hearth steel works, and 1 open-hearth steel works is building. Besides these there are several other iron and steel works located outside the county, but owned in Pittsburgh.—*American Manufacturer.*

The Chicago Polished Steel Shafting Co. has bought land and is building works at Cummings, near Chicago.

Furnace No. 2 at Coplay, Pa., has been thoroughly repaired, and went into blast last week.

The Rail Market.

Steel Rails.—A steady run of small orders is reported; they are placed at $47 to $49 per ton at mill, according to size of order and date of delivery. From Philadelphia a few heavier orders are reported, taken chiefly by Western mills at $46 to $47 at mill. There are many inquiries for large lots, and it is expected that some heavy contracts will be placed soon.

Iron Rails.—No sales are reported, and the market may be called steady and unchanged.

Rail Fastenings.—Spikes are in active demand, but are unchanged at $2.90 to $3 per 100 lbs. No sales of fish-plates and track-bolts are reported, the market being at present bare of supplies.

Old Rails.—The market is quiet, but prices steady. Sales of tees are reported at $27 per ton in Philadelphia for foreign iron, and $28 for American, which are scarce. Several sales of crop ends are reported at $24.25 per ton.

The Iron Strike.

The manfacturers last week rejected an offer of the puddlers to resume work at $5.75 per ton, and stated their resolution to accept no compromise.

A dispatch from Pittsburgh, Sept. 19, says: "The long strike of the iron-workers is over. For the first time in the history of the Amalgamated Association of Iron & Steel Workers, they have been defeated in an effort to secure a scale of wages adjusted by their representatives. That the manufacturers would win this long fight became apparent several weeks ago, and was assured by recent action on the part of different classes of the strikers. Since June, when all the iron mills suspended operations in this district, and 10,000 skilled iron-workers went on strike, there have been many exciting days, but on no other occasion was the interest more intense than to-day. Everybody knew that the representatives of the striking iron-workers were to consider for the first time as a body whether it was advisable to continue the strike or return to work at last year's wages, and, although the statements of a few persons who were supposed to know inclined many to believe that a determined stand against surrender would be taken, the conservative element predominated, and the majority declared in favor of resumption at the old scale. Delegate meetings for the purpose indicated above were held in this city, in Wheeling, West Va., and Youngstown, O., headquarters of the First, Second and Sixth Districts, respectively. At the meeting in this city all the lodges in the First District were represented. The streets in the vicinity of the hall were thronged all the afternoon with an anxious crowd, in which the six-dollars-or-no-work element seemed to be in a noticeable minority.

"President Jarrett was called to the chair, notwithstanding the fact that many puddler delegates were outspoken in favor of some other officer taking charge of the assemblage. After a full expression of opinion from all present, Mr. Jarrett, in a long speech, informed the men that the time had arrived for ending the lock-out; that the fight had been honorably and fairly conducted by all parties interested, and that a prolongation of the struggle only meant defeat and disorganization. He advised the men to accept the ultimatum of the manufacturers. His remarks were well received, and the stand taken by him was noticeably strengthened by the receipt of a telegram from Youngstown stating that the men in the Sixth District had unanimously declared in favor of going in at the old scale. This stiffened the backbone of the conservatives and caused the fighting ones to waver. The vote in favor of accepting the $5.50 scale for boiling iron was 81; in favor of 86 and a continuance of the strike, 27; majority in favor of accepting the inevitable, 54. Shortly after this action the delegates separated."

On Sept. 20 the Joint Conference Committee of the manufacturers and the Amalgamated Association met, and after a long conference the following memorandum was signed:

"We, the representatives of the Amalgamated and Western Iron Associations, respectively, agree to the starting of all mills in the First, Second and Sixth Amalgamated districts, upon the exact schedule of wages paid in those districts during the year ending June 1, 1882. We further agree to refer back to the Second District for adjustment all questions of boiling, nail-plate heating, nail-plate rolling, the scale of weights and lengths, and repairs to nail machines; also, that the column of prices on page 11 of the scale ending June 1, 1882, pertaining to knobbling, 'pig metal,' be stricken out and nothing inserted instead."

The present strike is almost the longest on record, having lasted three months and a half. It is remarkable for the general absence of ill-feeling between the parties and for the quiet and apparent peacefulness which prevailed during its continuance.

British Rail Exports.

For the month of August and the eight months then ending the exports of rails from Great Britain are reported as follows by the Board of Trade, in tons of 2,240 lbs.:

	August.			Eight months.		
To United States:	1880.	1881.	1882.	1880.	1881.	1882.
Iron rails	4,419	5,703	200	74,875	77,576	20,813
Steel rails	11,853	23,820	12,979	82,814	136,662	132,413
Total	16,272	29,583	13,179	157,689	214,238	153,226
To all Countries:						
Iron rails	8,207	9,801	1,946	102,733	92,740	37,959
Steel rails	44,329	57,806	72,320	331,686	390,293	505,017
Total	52,536	67,607	74,266	434,419	483,033	542,976

The total exports to the United States last August were not half as great as last year, and were a fifth less than in 1880, and the exports of iron rails to this country were but one twenty-eighth of what they were last year. At the same time the exports of rails were much greater to other countries than for many previous years, being 61,087 tons this August, against 38,024 last year, and 36,264 in 1880. This year the exports to British North America were over 80 per cent. greater than those to the United States and 124 per cent. more than last year. India also took an unusually large amount in August, and the unspecified "other countries," of which Mexico is probably now the chief taker of rails.

For the eight months ending with August the total exports to the United States were 61,000 tons (28½ per cent.) less than last year, but only 4,463 tons less than in 1880. Yet in the exports to all countries there is a larger increase this year than in any other as far back as 1873, it is safe to say. The exports to countries other than the United States were 389,750 tons this year, against 258,795 in 1881 and 276,730 in 1880. The increase this year is chiefly in India and the unspecified "other countries," these latter taking 106,284 tons this year, against 49,275 in 1881 and 39,637 in 1880. The takings of British America for the eight months have not varied much for the three years.

The Cleveland Bridge & Car Works.

The property of this company is now offered for sale by the assignee. It will be sold as an entirety or in two lots, as offers may be received.

One lot will consist of the car works, which have a capacity of eight box cars a day; there is a large lot of dry lumber, iron and other materials on hand.

The other lot consists of the bridge works, which are well supplied with the tools and machinery for general bridge construction.

Terms may be ascertained on application to W. H. McCurdy, Assignee, and Luther Allen, Trustee, in Cleveland Ohio.

The Great German Railroad Accident.

The Berlin correspondent of the London *Times* telegraphed the following details of the great accident at Hugstetten in Baden, by which, according to the latest accounts, 71 lives were lost and many more wounded. In all there were from 1,200 to 1,500 passengers in the train. The train was to return from Freiburg to Münster and Colmar at ten minutes past 8 p. m. (Baden time), but lost about five minutes, which the Baden driver wished to recover. Instead, therefore, of going at the speed allowed for the return journey, about fifty kilometres an hour, the train went from Frieburg toward Hugstetten at almost double that rate, which was the more dangerous as the 26 carriages full of people were served by only five brakemen, and as immediately after passing Freiburg the railway has a considerable gradient downward. The accident happened before reaching Hugstetten, in a marshy wood.

According to the *Strasburger Post*, the train, which was more than twenty carriages long, was drawn by a heavy goods-train engine. These engines are fitted to draw great weights, but not to run fast. Notwithstanding the steep gradient, the train had but few brakes. The lost time had to be recovered. The train, according to unanimous statements of the passengers, was flying along like an express. The goods-train engine, with its small, strong wheels, was now more pressed forward by the carriages rolling behind it, than they drawn by it, and so it oscillated to and fro, and especially in the sharp curve pressed terribly against the outer rail. The driver, foreboding the danger, probably put on the brake, and thus the engine was shoved off the rails by the carriages following with terrific momentum.

A large number of the victims belong to the families of officials, especially, it is said, of customs officials. Single officials had bought from fifty to sixty tickets for their friends. A large number of high officials are also among the sufferers and mourners. A violent thunder-storm was raging during and after the accident, and the rain fell in torrents. Flashes of lightning momentarily lighted up the ghastly scene, made more dreadful by the moaning of the wounded and the crying of children for their parents and parents for their children. Of the passengers, those who immediately put their feet on the seats came off best. There was one whole compartment in which the passengers did this, and there was not one single person wounded, though all its walls burst asunder.

Electric Light on Railroad Cars.

The first car that has been illuminated with electricity in this country arrived at the Broad street station last evening, where it immediately became an attraction for railroad officials, electricians and others. At the solicitation of one of the companies operating Edison's electric lights, the Pennsylvania Railroad Company granted permission to them to supply one of its cars with the necessary apparatus for lighting it by electricity, and for some time past the work has been going on at Jersey City, under the management of Dr. Dudley. The lights are incandescent, and are of eight-candle power. A Faure storage battery is used, and it is stated that all the fixtures, of which the batteries, Edison's electric dynamo and Faure's electric accumulator constitute the greater part of the weight, add about 1,200 pounds to the weight of the car. The lights are arranged in pairs at the centre and ends of the car, giving sufficient light for reading well, and are not in the least influenced to flicker by puffs of wind. As it is well-known, the light is less tiresome to the eyes than gaslight, and one can look at them without being blinded. It is understood that upon this practical test of the efficiency and expense of electric lighting will depend its permanent use by the company. A number of the company's employés and those interested in the practical success of electricity as an illuminator took a short excursion out as far as Paoli last evening for the purpose of examining the lights, and probably for the sake of riding in a car which, if electricity were not now so common, would be considered as great a wonder as the first locomotive.—*Philadelphia North American, Sept. 20.*

Locomotive Cabs.

And now a Boston man urges that the locomotive cab should be placed on the front end of the engine, so as to give the engineer a free and uninterrupted view of the track. In his present position, it is claimed, he can see ahead only on a straight line, while on a double-track road his view is limited entirely to his own track. The change is one that could be made without much difficulty, and it is urged that it would add greatly to the safety of the engineer and the train.

As the question has been brought up, expressions of opinion from those most interested would be of value.

Feet.

"Ticket!" said the conductor, as he stopped in front of a Chicago man, who looked as if he was anchored to his seat.

The fellow addressed handed over the required pasteboard, which was duly punched, and looking around the conductor said:

"Where's your friend?"

"What friend? I have no friend."

"Where's the party occupying this seat with you?"

"I'm alone," said he, looking somewhat puzzled at being questioned.

"Then what are you doing with two valises?"

"Two valises! why, I haven't any," at the same time moving his feet with exertion.

"Oh! excuse me," said the conductor, and as he passed out of the car was heard to remark: "The biggest feet I ever saw."—*Envious St. Louis Paper.*

Fire in a Tunnel.

On Sept. 17 there was a collision between two Missouri Pacific freight trains in a tunnel near Kirkwood, Mo. The tunnel was filled with wrecked cars, and a fire started soon afterwards, which proved very troublesome. The St. Louis *Republican* of Sept. 19 thus describes the scene the morning after the wreck:

"Yesterday morning another fire engine, No. 19, with a supply of hose, was sent out to the scene of the subterranean conflagration on the Missouri Pacific road, Assistant Chief John Lindsay being authorized to send out the engine. Arriving at the east end of the tunnel, the engine had to be taken off the train and drawn around to the west end, over a dusty road, very hilly and full of ruts. Then it had to be lowered to the mouth of the tunnel down an inclined plane. The lowering process was a slow one. After some time it got to work. Great volumes of thick, black smoke poured out of the tunnel, at the two mouths of which there congregated quite a number of people. Every once in a while the sound of underground explosions reached the outside. They were caused by the slacking of the limestone through which the tunnel is constructed. At the western entrance to the tunnel the track for about 100 ft. is covered with lime chips, which dropped from the arch, owing to the tremendous heat inside. The noise of the flames inside is great, and the smoke pours out of the tunnel very black and with great softness. The firemen at the western entrance take their water from a number of tanks, which

are being constantly filled from the Meramec River, while the water which is poured in upon the flames from the east is brought out to the scene in tanks from the city. The work is very slow, owing to the fact that operations have to be suspended every time a tank is emptied. At the western end the firemen enter the tunnel with the hose in a box car in order to protect themselves from the falling rocks. Assistant Chiefs Lindsay, Bame and Gross were out there all day yesterday, the two former gentlemen coming into the city yesterday. Capt. Gross remained out there all night fighting the fire, and at latest reports expects that he will have much accomplished before morning.

"Mayor Ewing, Comptroller Adreon, Counsellor Bell and Commodore Smith visited the scene yesterday afternoon in a special car, and are enthusiastic in their description of the scene. Mr. A. A. Talmage and Mr. J. J. Frey visited the scene yesterday afternoon at 2:30 o'clock. By this evening it is hoped the flames will be extinguished and the men may be able to get at work clearing off the debris. The 'Frisco west-bound train was abandoned last night."

The Lorenz Refrigerator Car.

A patented refrigerator car, built by the Lorenz Refrigerator Car Co., of Hamilton, O., is now on exhibition for the first time in this city at the Anglo-American Packing Co.'s packing-house at the stock-yards. In the walls of this car is an air-chamber through which the fresh air descends from the top, being cooled on its way down, and penetrates the interior through a strip of perforated metal surrounding the edges near the floor. The incoming air, cooled by ice in racks at either end of the car, forces the foul air to the roof, where it escapes through six flues. Lengthwise across the floor is a drain which carries off the ice drippings through an aperture in the centre. The Lorenz principle has been applied with great success. The car is so dry that a match can be struck almost anywhere on the walls. This absence of moisture destroys all sweating and rotting of the wood, thus making the car the superior of all others in the matter of durability. Old refrigerator cars are reconstructed by the company on this plan. The ventilation, it is claimed, always keeps the car sweet, no taint or bad smell remaining in it after a long journey.—*Chicago Tribune, Sept.* 19.

Phosphorescent Paint in England.

A railway carriage painted inside with the Balmain phosphorescent paint is included in one of the trains between London and Rotherhithe, *via* the Thames tunnel. Although only one-half of the available space of the carriage is painted, the phosphorescent light is quite sufficient to enable the passengers to distinguish small objects when passing through the tunnel; and, moreover, the light is powerful enough to enable a person to read the indication of an ordinary watch. It is thought probable that the railway companies will be enabled to effect a considerable saving in gas and oil by using the phosphorescent paint.

An Accident to a Distinguished Party.

A dispatch from San Francisco, Sept. 13, says: "The special train with the Marquis of Lorne and the Princess Louise on board was run into at Port Costa this morning by a yard engine. The viceregal train on leaving the ferry-boat received the signal to go ahead. Just before reaching a curve about a quarter of a mile from the ferry, while the train was moving at the rate of about six miles an hour, a yard engine came around the curve with a rush. Both engines were immediately reversed, and the engineers and firemen jumped to the ground. The collision was very violent, and the engine of the special train w s badly damaged. The Princess Louise, who was making her toilet at the time of the collision, was thrown down, but received no injury beyond the most trifling bruises. All the occupants of the car were shaken up. The crockery was broken, and parcels, etc., were strewn about, but no one was injured. Another engine was furnished and the train proceeded."

The Report on Locomotive Coupling Rods.

Mr. Howard Fry informs us that the report on "Locomotive Coupling Rods" presented by him at the Master Mechanics' Convention (which was published in the *Railroad Gazette* of Aug. 18, page 500, and there credited to him) was not his work, but was written by Mr. Edgar Worthington, an English engineer, who served his time on the London & Northwestern road, and who is now in Mr. Fry's office for the purpose of studying American locomotive practice.

A Large Fly Wheel.

The largest fly wheel for a stationary engine ever constructed in the United States has been finished by Watts & Campbell, Newark, N. J., for the Clark Thread Works, in the same city. The wheel is built in seven sections, each weighing seven tons. It is 25 ft. in diameter, and its face is 7 ft. 6 in. It has three crowns, on which three 24-in. belts run. The lathe was two weeks, running night and day, in turning off the face of the monster wheel, and five tons of turnings were taken from the surface. The total weight of the wheel is 49 tons.

The Universal Blooming Mill.

The difficulty existing between Jacob Reese and the Pittsburgh Steel Casting Co. in regard to the universal blooming mill, built by A. Garrison & Co., has been settled by a recognition of Mr. Reese's rights. The license fee has been paid by the Steel Casting Co., and A. Garrison & Co. advised to deliver the machine, so that the Bessemer steel department of the Steel Casting Co. will soon be put into full operation for the production of soft steel blooms, billets, slabs or plates, which will add largely to the business of the company.—*North American.*

New Lake Steamer.

The Union Dock Co. of Buffalo has nearly completed, for the Lehigh Valley Transportation Line, a new freight steamer, the "Fred Mercur," which will be a duplicate of the "Harry E. Packer," recently finished for the same company by Quale of Cleveland. The length of keel is 225 ft.; over all, 240 ft.; beam, 35 ft.; hold, 18 ft.; measurement, about 1,142 tons. It will carry about 60,000 bushels of corn, or 1,680 net tons. The equipment is said to be equal to the best. The cost is about $100,000. This line now has six propellers, whose total capacity is 10,000 tons.

OLD AND NEW ROADS.

Arkansas & Indian Territory.—This company has filed articles of incorporation to build a railroad from Washington, Ark., west by north to the Indian Territory line in Sevier County. The distance is about 55 miles. The road is to be an extension of the line now running from Hope to Washington.

Arkansas & Louisiana.—This company has filed articles of incorporation for a railroad from Hope, Ark., southeast to the Louisiana line, about 60 miles.

Arlington & Atlantic.—This company has been organized to build a railroad 13 miles long from Arlington, Fla., on the St. John's River, eastward to the Atlantic shore, at a point eight miles below Mayport. The beach there is said to be one of the finest on the coast. The company will build a large hotel at the terminus of the road.

Ashland, Montreal River & Ontonagon.—Arrangements have been made to survey the line of this proposed road from Ashland on Lake Superior to the Iron Range in Northern Wisconsin, a distance of about 45 miles.

Atchison, Topeka & Santa Fe.—This company's New Mexico & Arizona line is now completed to a point 90 miles southward from the junction with the Southern Pacific at Benson, Ar., leaving only about five miles to reach the terminus at Las Nogales on the Mexican frontier.

The Sonora line in Mexico is reported finished to a point about five miles south of Las Nogales, so that only 10 miles of track remain to be laid to complete the line to Guaymas on the Gulf of California.

Atlantic & Pacific.—The Boston *Transcript* of Sept. 14 says: "The syndicate has resumed its call for bonds by asking for $990,000 more of them Saturday. It will be remembered that subscribers have paid in 30 per cent. upon these blocks, and the syndicate about 30 per cent. more, as the syndicate had the option of taking subscribers' bonds and 25 per cent. of incomes, leaving subscribers with 50 per cent. of stock and 50 per cent. of income bonds costing them nothing, this option to expire whenever 40 per cent. has been called from the subscribers. Thus far the syndicate has furnished all the money beyond the first 30 per cent. paid in by subscribers, but as the syndicate had agreed at first only to furnish 30 per cent., the question of who would furnish the balance of the money to complete the Atlantic & Pacific has been undetermined until now, the call for $990,000 more bonds by the Seligman syndicate, which is marketing the bonds abroad, would appear to practically settle the question. The payments under the second Atlantic & Pacific subscription, therefore, stand as follows:

First 30 per cent. paid by subscribers	$1,980,000
Forty per cent. paid by syndicate	2,640,000
Thirty per cent. still due	1,980,000
Total subscription	$6,600,000

"The impression now is that all the bonds will be taken by the syndicate, and subscribers repaid their money with 6 per cent. interest and a bonus of 50 per cent. in stock and 50 per cent. in incomes. The price of 110 for Atlantic & Pacific blocks means but 20 for Atlantic & Pacific incomes now selling at 27, and nothing for the same amount of Atlantic & Pacific stock, which has better prospects than Union Pacific stock when it was first issued."

Track has at last reached Williams, Arizona, 66 miles westward from the late terminus at Cañon Diabolo, 368 miles from the junction with the Atchison, Topeka & Santa Fe at Isleta, N. M., and 378 miles from Albuquerque. This track was reported laid some weeks ago on the strength of a time-table issued by the company, which showed trains running to Williams, but at that time the great bridge over the Cañon Diabolo was not yet completed.

The main line is now about 175 miles from the Needles on the Colorado River, where it will meet the Southern Pacific. The grading is substantially finished for 127 miles further, and the bridges at Johnson are being put up, so that there will be no further delays to the tracklayers.

Work has been begun on the branch which is to run southward from Williams to Prescott, a distance of about 75 miles. Track will probably not be laid on this branch until the main line is completed.

Bangor & Portland.—The track on this road is now laid to Nazareth, Pa., 10 miles beyond the old terminus at Pen Argyl, and 25 miles from the starting point at Portland on the Delaware. The new extension reaches several slate quarries.

Brownsville & Jackson.—This company has been organized to build a railroad from Brownsville, Tenn., east to Jackson, about 25 miles. Work is to be begun at once.

Cape Girardeau Southwestern.—This company, formerly the Cape Girardeau, last year completed its line from Cape Girardeau, Mo., on the Mississippi River, west to Delta on the Iron Mountain road, and thence southwest to Lakeville, in all 26 miles. An extension has lately been completed to Sturtevant, seven miles beyond Lakeville, and 33 miles from Cape Girardeau.

Denver & Rio Grande.—Track on the Utah Extension is now laid for 18 miles westward from the Uncompahgre River at Montrose, Col. Work is progressing very rapidly, and it is expected that the road will reach the Utah border before the close of the year.

Gulf, Colorado & Santa Fe.—This company has completed an extension of its Dallas Division (formerly the Chicago, Texas & Mexican Central road) into the city of Dallas, a distance of two miles beyond the old terminus. Formerly the Houston & Texas Central track was used.

Houston, East & West Texas.—Track on this road is now laid to Lufkin, Tex., 15 miles northeast of the late terminus at Natchez, and 120 miles from Houston. Work is progressing on the extension from Lufkin to Nacogdoches.

Hoyt's Corners, Ovid & Willard.—This company has been incorporated to build a railroad from the Willard Insane Asylum to Hoyt's Corners, N. Y., on the Geneva, Ithaca & Sayre road. The state will furnish the right of way through the asylum property, and will do the grading; the Lehigh Valley Company will furnish the rails and operate the road.

Illinois, Iowa & Minnesota.—This company has filed articles of incorporation to build a railroad from Streator, Ill., northwest to the Mississippi River opposite Clinton, Ia., a distance of 85 miles, with such short branches as may be necessary to reach coal mines near the line. The capital stock is to be $2,000,000.

Indiana, Bloomington & Western.—Through trains begin to run this week over this road between Columbus, O., and Peoria, Ill. Arrangements have been made for connections and through cars from Peoria over the Chicago, Burlington & Quincy to Quincy and Burlington, and to Cincinnati over the Cincinnati, Hamilton & Dayton.

An Indianapolis dispatch says that it is announced there that nothing will be done this year on the proposed extension of the St. Louis Division from Decatur to East St. Louis. It is reported that negotiations are in progress for the use of the Wabash track to St. Louis.

Indianapolis & St. Louis.—The purchasers of this road at the recent foreclosure sale have organized the Indianapolis & St. Louis Railroad Company, and have filed the necessary certificates. The road has been transferred to the new company, the capital stock of which is $500,000. The new organization is controlled by the Cleveland, Columbus, Cincinnati & Indianapolis Company.

Jersey Shore, Pine Creek & Buffalo.—An agreement has been completed for the crossing of the Philadelphia & Erie tracks at Linden, Pa. The new road will cross above grade.

Lake Shore & Michigan Southern.—Notice is given that the bonds issued in 1872, and falling due this year, will be paid at the office of the Union Trust Company in New York, Oct 2. Interest will cease from the date of maturity. The amount of these bonds outstanding is $2,507,000, and they bear 7 per cent. interest.

Louisville & Nashville.—The people of Troy, Ala., are trying to induce this company to build a branch from the Mobile & Montgomery Division at Greenville eastward to Troy, about 35 miles.

Marshall & Northwestern.—A contract for grading the first section of this road has been let to Belcher & Carpenter, of Ft. Worth, Tex. The road is to run from Marshall, Tex. northwest to Pittsburgh, about 50 miles.

Maryland Central.—Work is being pushed on this road (late the Baltimore & Delta), and it is expected that the track to the Gunpowder River will be finished this month.

It is again reported that negotiations are in progress for the transfer of the road to the Baltimore & Ohio, to be used as part of its new line between Baltimore and Philadelphia. The charter confers some valuable privileges, and part of the line could be very well used for that purpose.

Massachusetts Central.—The Boston *Traveller* of Sept. 15 says: "It is now certain that one of two things must be done in order to save the road—the bonds must either be converted into preferred stock and a new mortgage placed on the road, or they must be made second mortgage bonds, and as such await the full development of the line for returns. The chief and perhaps the most difficult obstacle yet to be overcome by the management is the securing of a release from the lease made 18 months ago to the Boston & Lowell Railroad Company. Under it the Massachusetts Central Company is paying largely for its terminals—more so than it can well do. The Massachusetts Central people are disposed to negotiate with the Lowell people for suitable terminals, and the latter will probably be willing to give them what they desire independent of the traffic arrangement or lease. The Boston & Lowell road has established its western connection *via* the Concord and Grand Trunk lines, and no longer needs the Massachusetts Central for that purpose. Certain negotiations are now in progress by parties associated with the road looking to the formation of a syndicate and the securing of a controlling interest in the bonds, but these are so much in embryo, and so very uncertain as to success, that they can avail but little toward saving the road."

Mexican Central.—The first train from El Paso reached Chihuahua, Mexico, Sept. 16. Three trains, with about 500 passengers on board were run through, and were received at Chihuahua with great rejoicings. Chihuahua is the capital of the state of that name, and the most important town in Northern Mexico.

A dispatch was received in Boston by the Western Union Telegraph Company, which made a circuit between the following points: Boston, Buffalo, Chicago, Kansas City, Pueblo, Col., Rincon, N. M.; El Paso, Tex., and Chihuahua, Mex., a distance of 3,037 miles, one of the longest overland circuits ever worked by the company. The first dispatch received read as follows: "Chihuahua, Mexico, Sept. 16.—To Thomas Nickerson, President Mexican Central Railroad. The last spike connecting Chihuahua with El Paso has just been driven, amid salvos of artillery and great enthusiasm."

Mexican National.—This company sends us the following note under date of Sept. 13:

"To-day the track of the Mexican National Railway is laid 102 miles out of the city of Mexico; 170 miles from Laredo to Monterey; and something over seven at Manzanillo, in all 279 miles built under the main concession.

"This completes the 450 kilometres stipulated in the main concession to be finished within two years from the beginning of construction. This term of two years does not expire until Oct. 14, 1882.

"We have built in Mexico now, under other concessions, 74 miles additional, making our mileage already constructed in Mexico 353. The Texas-Mexican lines extend 179 miles, making the total constructed mileage of the company to date 532 miles."

Mexican Railroad Prospects.—Hon. John Bigelow has, in the October number of *Harpers' Magazine*, an article entitled "The Railway Invasion of Mexico," in which he discusses at some length the prospects of the subsidized railroad now being built in Mexico by American companies and capital. He sums up as follows:

"1. Voluntary emigration cannot be relied upon to any appreciable extent.

"2. Railways must depend mainly upon the transportation of the products of Mexican industry, and of the purchasing power of its surplus in foreign markets. The railway business, therefore, cannot increase rapidly nor endure much competition.

"3. To make railways at all remunerative in Mexico they must be constructed and run with the closest economy and system. There will be no margin for extravagance or roguery.

"4. There are so many elements of uncertainty to be reckoned with in these investments, especially if made under the auspices and in the special interest of foreigners, that, while they would unquestionably prove highly advantageous to Mexico, and might ultimately prove highly remunerative to stockholders, at present they should be *caviare* to all who have not money to invest which they can afford to lose."

Michigan Central.—This company gives notice that the 8 per cent. mortgage loan and first and second sinking fund bonds which mature Oct. 1 next, will be paid after that date at the office of the Union Trust Company in New York, or the New England Trust Company in Boston. Interest will cease from Oct. 1. The amount of these bonds outstanding is $1,987,500.

Montana.—This company has been organized to build branches or extensions of the Utah & Northern road from Blackfoot, Montana, to Helena, Ft. Benton, and into the Yellowstone Park. It is controlled by the Union Pacific.

Natchez, Jackson & Columbus.—The track of this road reached Jackson, Miss., last week, and the opening of the line was celebrated on Sept., 14, by an excursion, barbecue and other festivities. The road is now completed from Natchez northwest to Jackson, 98 miles, through a very fertile country, which has heretofore had no rail outlet. It is of 3 ft. 6 in. gauge, and has been built largely by local capital and town and county bond subscriptions.

New Brunswick.—This company has taken possession of the New Brunswick & Canada road under the lease lately ratified. The company now works lines from Gibson, N. B., to Edmundston, 162 miles; Aroostook, N. B., to Presqu' Isle, Me., 34 miles; Junction to Woodstock, 8 miles; Woodstock to St. Stephen, 86 miles; Debec, N. B., to Houlton, Me., 8 miles; McAdam, N. B., to Vanceboro, Me., 7 miles, and Watt Junction to St. Andrews, 28 miles, making in all 333 miles of road.

New Brunswick & Canada.—This road has been formally turned over to the New Brunswick Railway Company under the lease lately made.

New York, Lake Erie & Western.—This company has begun to run through Pullman cars between Chicago and New York in connection with the Grand Trunk. The route is by the Erie from New York to Suspension Bridge, and thence by the Great Western Division and the Chicago & Grand Trunk to Chicago.

New York & New England.—The Boston *Transcript* says: "The work of double-tracking the New York & New England Railroad is proceeding quietly, but regularly, and it will not be a very great while before two tracks will extend the entire distance between Boston and Hartford, over which the bulk of the business of the road is carried. From Boston to Hartford is 117 miles. At the Boston end there are 28 miles of double track, extending to Franklin, and at the Hartford end there are four miles. In addition to these 32 miles there are seven miles of siding, which is equivalent to so much double track, and will form portions of the second track when it is completed. This siding, of course, does not include the numerous pieces of turn-out and yard track. An order has also been issued for the immediate building of 12 more miles of siding between the two termini, which will increase the length of double track to 51 miles, leaving but 66 miles of the single line out of 117. Between Putnam and Willimantic there is very little work to be done on the road-bed, and when the order is given to double track the whole distance (and the matter is already in contemplation) the two places can be united by a double line within six months' time. West of Willimantic there are six or seven miles where the work will be heavy; the rest will be easy. There would seem to be no reason to doubt that within a year or 18 months double tracks will connect Boston and Hartford. This extension of facilities has been necessitated by the constant increase of traffic, which is from 30 to 40 per cent. greater than it was a year ago. The New York & New England is the only single-track road in the Eastern states doing a fluctuating business. The other roads have their regular traffic, and have had it for years, while the New York & New England is subject to the variations inseparable from a new line. This has been the principal cause of the recent accidents to freight trains. These accidents having occurred in quick succession have occasioned some comment; but it should be remarked that, notwithstanding the increased percentage of traffic over last year, the percentage of mishaps has been much less."

New York, West Shore & Buffalo.—This company is now vigorously pushing its track-laying in Rockland, Orange, Ulster, Albany, Schenectady, Oneida, Madison, and Onondaga counties, in New York. Up to Sept. 9, there were 37 miles laid. Track material for about 125 miles of double track is distributed along the line ready for use. Iron bridge superstructure was also erected at that date to the amount of 980 tons, with a further amount of 6,400 tons manufactured and in process of erection.

The construction of passenger and freight stations, engine-houses, turn-tables, tank-houses, wells and pump-houses, is also in progress at Newburg, Kingston, Milton, Catskill, New Scotland, South Schenectady and Canastota. Contracts have also been awarded and construction will be immediately begun on the passenger and freight stations at Marlboro, Highland, Esopus, Glasco, Coxsackie, Saugerties, Coeymans, West Athens, and other points.

The great tunnel at Weehawken is rapidly approaching completion; on Sept. 1 only about 740 ft., (or 19 per cent. of the whole length) remained unfinished. It will probably be through on or before Dec. 1 next.

The Haverstraw tunnel, of 1,600 ft. in length, is completed; and the West Point tunnel, of 2,660 ft. in length is now within 130 ft. of completion. It will in all probability be finished by Nov. 15.

The force working on the line between Weehawken and Middletown, and Cornwall Junction and Syracuse, on the 1st inst., was as follows: 19,000 men, 120 steam and compressed air drills, 17 steam excavators, 3 dredging machines, making a total force equivalent to 23,400 men.

And in addition thereto there were in use 3,731 horses, 37 locomotives, 1,242 cars, 16 pile-drivers, 65 steam derricks, 8 steam pumps, and 28 tugboats, scows and barges.

Norfolk & Western.—The shops which this company and the Shenandoah Valley are building for their joint use at the junction of the two roads in Roanoke, Va., include a round-house with 42 stalls; a blacksmith shop 350 by 72 ft.; a machine shop, 348 by 72 ft.; an erecting shop, 375 by 64 ft.; a boiler and tank shop, 141 by 64 ft.; a foundry 252 by 72 ft.; a wood-machine shop, 250 by 72 ft.; a passenger car shop 575 by 65 ft., including the paint-shop; a cabinet and upholstery shop 250 by 70 ft.; a freight car shop in the form of a round-house with 44 tracks; a drying shed for lumber, a store-house, stationary engine and boiler houses and other small necessary out-buildings. These shops will be fully supplied with tools, and are expected to be of sufficient size to do all the repair work and build the new equipment for the two roads. Provision is to be made for ample water supply for all the shops, and for use in case of fire.

Northern Pacific.—Track on the main line is reported laid to Park City, Montana, 24 miles west of the late terminus at Billings, and 940 miles from St Paul. The work is advancing very rapidly.

The Northern Pacific Terminal Company has been organized in Oregon for the purpose of building branches of this road; also to build and operate elevators, wharves, bridges, steamboats, ferries and telegraphs, and to lay out and build towns and villages and for other similar purposes auxiliary to this company.

The syndicate headed by Messrs. Drexel, Morgan & Co., Winslow, Lanier & Co. and August Belmont & Co., of New York, and Drexel & Co., of Philadelphia, who agreed to place $20,000,000 of the company's 40 year 6 per cent. gold bonds, a general mortgage on both railroad and land grant, are offering $5,000,000 more of them for public subscription at the respective offices of the firms composing the syndicate. The issue of these bonds is limited to $25,000 per mile of completed road, on which they are a first mortgage, and they are receivable at 110 for lands. The general mortgage includes all the land grant except the lands east of the Missouri river, subject only to the lien of the Pend d'Oreille and Missouri Division bonds. The present lot is offered at 102½ and interest, and the subscriptions were to be received on Sept. 21.

The directors of the company, at a meeting held Sept. 14, declared a scrip dividend of 11.1 per cent on the preferred stock. The form of the scrip to be issued by the company has not yet been determined, but the Finance Committee was directed to prepare a form of obligation and receipt subject to the approval of the board. The obligation will be dated Jan. 1, 1883, will bear 6 per cent interest, payable annually, and will be due at the end of five years, but redeemable after one year at the pleasure of the company upon giving 30 days' notice. The amount redeemed at any one time cannot be less than 20 per cent of the principal. This dividend is made in full settlement of all claims on account of the net earnings of the company from its reorganization to July 1, 1882. The amount of these earnings which have been diverted to construction, has been found by the accounting officers of the company to be $4,667,490.68. The dividend also includes interest from July 1, to the date of the scrip. The certificates of obligation will be delivered on Jan. 15, 1883.

The land sales in August were, on the Eastern Division, 68,493 acres for $251,979; on the Western Division 5,623 acres for $17,962. These amounts include town lots sold.

The St. Paul *Pioneer-Press* of Sept. 18 says: "A corps of engineers, whom, it may be safely assumed, are in the employ of the Northern Pacific, are at work between the twin cities running preliminary lines. The work is wrapped in some mystery, as the greatest secrecy has been observed by the corps in the field, and the officials of the company are reticent. The work, however, is presumed to be a part of the policy of the company to provide an independent line for itself, not only between St. Paul and Minneapolis, but a connection with the main line, to obviate the necessity of maintaining the leasehold arrangement with the Manitoba, which desires to have the exclusive use of its lines. The Northern Pacific people are hampered by a running arrangement which is embarrassing all around. A road constructed according to this survey would be but little if any longer than the other short lines to Minneapolis, and would enter into sharp competition with the two other roads for the traffic between the two cities, and become an important factor in their great system. The survey is being conducted in a rather unnecessarily mysterious manner, no explanation being given by the surveyors to the farmers through whose property they run their lines, and some of the latter threatened to eject them from their premises as trespassers. Although the company has not yet decided definitely what line to take, it may be set down as an assured fact that the Northern Pacific will have a line of its own to Minneapolis within a very short time, which will doubtless be extended to Anoka and to Sauk Center, thus completing their chain of connections from this end to Brainerd, thence west and east."

Ohio Central.—Track is laid on the extension of this road from Corning, O., southward to Athens, 17 miles. The track is now being ballasted, and regular trains will shortly be put on. Work is well advanced on the line from Athens south to Pomeroy on the Ohio River.

Pemigewasset Valley.—The grading of this road from Plymouth, N. H., to Woodstock, 20 miles, is very nearly done, and track-laying has been begun at Plymouth.

Rio Grande & Pecos Valley.—This road is now nearly finished from Laredo, Tex., up the Rio Grande, 26 miles, to reach extensive coal deposits. It is reported that an agreement has been concluded for the extension of the road to Eagle Pass, and for the supply of coal to the Southern Pacific at that point.

St. Johns & Halifax.—Work is in progress on the extension of this road three miles to Big Cypress, 12 miles from the starting-point at Rallstown, Fla. As soon as the track reaches Big Cypress, stages will run from the terminus to Ormond, on Halifax River.

St. Louis & San Francisco.—Trains on the Arkansas Division have begun to run through to Mountainburg, Ark., which is 15 miles south by west from the old terminus at Winslow, 108 miles from the junction with the main line at Plymouth, Mo., and 393 miles from St. Louis. From Mountainburg it is 21 miles to Van Buren and 27 miles to Ft. Smith.

Sanford & Indian River.—Track has been laid on this road from Sanford, Fla., southeast to Lake Jessup, six miles, and a train is running.

Securities on the New York Stock Exchange.—The following securities have lately been placed on the lists at the New York Stock Exchange:

Missouri, Kansas & Texas, $1,397,000 general consolidated bonds (Nos. 39,015 to 40,411, inclusive), issued on 70 miles of new road in Texas.

Souris & Rocky Mountains.—This company's line is to run from a point on the Canadian Pacific 100 miles west of Winnepeg, Man., northwest by Rapid City, Ft. Ellice, Battleton and Edmonton. A contract has been let to E. A. C. Pew to build the road, 50 miles to be finished by June next.

Southern Pacific.—The branch from Mohave, Cal., eastward to the Needles, on the Colorado River, which is to meet the Atlantic & Pacific, is now completed for 52 miles from Mohave, leaving 188 miles to reach the Colorado. The grading is done for 30 miles further.

Sparta, Chester & St. Louis.—This company has been organized to build a railroad from Chester, Ill., by Sparta to Centralia, on the Illinois Central. It will be a coal road

Toledo, Cincinnati & St. Louis.—Mr. G. H. Kimball, Chief Engineer of Construction of the Southeastern Division, sends us the following under date of Sept. 18:

"Tracklaying has advanced from Berlin, Jackson county, O., through Winchester, Madison Furnace and Oakland 15 miles, to a point between last named station and Gallia Furnace in Gallia County. Total laid, 17 miles, from junction with present Southeastern Division at Wellston. The grading is finished on the entire line, 38.66 miles. Tunnel No 1 has but 8 ft. remaining between the headings. Tunnels No. 2 and 3 were driven through on Aug. 30. The speedy completion of the work is assured.

This extension will connect the Southeastern Division with the old Iron Railroad, now owned by this company.

ANNUAL REPORTS.

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Pullman's Palace Car Co.

The report of this company for the year ending July 31, 1882, gives the following financial statement:

Stock		$12,574,600.00
Bonds		2,255,500.00
Amount received from sale of old cars leased from Central Trans. Co.		441,356.04
Surplus		6,023,823.56
Total		$21,295,279.60
Cars (564) equipments and franchises	$9,802,621.82	
Invested in car associations controlled and operated	2,737,363.83	
Stock in Union Foundry and Pullman Car Wheel Works	250,000.00	
Real estate and plant, Detroit Works	378,491.18	
Real estate, plant, etc., shops at Pullman	4,814,960.66	
Real estate and plant, St. Louis	109,052.27	
Plant, Mantua shops	11,412.21	
Real estate, Chicago	142,416.53	
Lumber, material and supplies	2,192,940.94	
Patents, U. S. and foreign	184,383.43	
Furniture, etc., 53 offices	67,201.57	
Balance of accounts	97,801.73	
Cash and call loans	506,534.43	
		21,295,279.60

Stock includes $600 fractional scrip. The stock was increased $4,550,800 during the year.

The bonded debt consists of $1,265,000 currency 8 per cent. debentures, of which $445,000 are due Feb. 15, 1887, and $820,000 Aug. 15, 1892; $941,000 currency 7 per cent. debentures, due Oct. 15, 1888, and $49,500 sterling 7 per cent. convertible debentures, due April 1, 1885. The increase during the year was $33,000 currency 7 per cent. debentures.

The surplus fund is included in the following statements:

Depreciation account	$1,000,000.00
Income account	5,023,823.56
Total	$6,023,823.56

This surplus is invested in the assets of the company. The course of the account during the year was as follows:

Surplus, July 31, 1881		$5,140,706.68
Surplus for 1881-82		1,011,535.95
Total		$6,152,242.63
Loss on cars sold or destroyed	$9,957.62	
Estimated depreciation of cars used for temporary purposes	100,000.00	
Doubtful accounts	18,461.45	
		128,419.07
Surplus, July 31, 1882		$6,023,823.56

During the year the Detroit shops account increased $7,842.99, and the Chicago shops account $2,269,055.70. The addition to the St. Louis shops account was $66,009.28.

The stock of the company is $22,295, and the bonds are $4,531 per car owned.

There are 564 cars owned directly. The total number of cars operated, including those of other car associations controlled and operated, was 773 at the close of the year.

The income account for the year was as follows:

Earnings, leased lines included		$2,815,986.47
Proportion of earnings of lines controlled and worked		582,230.93
Patent royalties		14,927.00
Manufacturing profits and miscellaneous		324,393.87
Total		$3,737,538.27
Working expenses, taxes and income	$917,307.51	
Maintenance of upholstery and bedding	207,156.33	
Proportion of expenses of controlled lines	148,427.45	
		1,272,891.39
Net earnings		$2,464,646.98
Rental of leased lines	$264,000.00	
Interest on bonds	169,043.25	
Dividends on stock	870,936.50	
Balance of account, rebuilding and remodeling cars	128,135.81	
Profit and loss	20,995.47	
		1,453,111.03
Balance to credit of income account		$1,011,535.95

Working and maintenance expenses include leased lines. The total number of cars worked was 773, so that the gross earnings were $4,396 per car, and the expenses $1,647 per car.

A comparison of the earnings, etc., with the previous year is as follows:

	1881-82.	1880-81.	Increase.	P.c.
Gross receipts	$3,737,538	$2,995,496	$742,042	24.8
Expenses	1,272,891	1,076,409	196,482	18.2
Net earnings	$2,464,547	$1,919,087	$545,560	28.4
Interest, etc.	582,175	455,867	126,308	27.8
Surplus	$1,882,472	$1,463,220	$419,252	28.6
Dividends	870,936	482,166	388,770	80.7
Balance	$1,011,536	$ 981,054	$ 30,482	3.1

The regular quarterly dividends, amounting to 8 per cent. in all, were paid, and since the conclusion of the year an extra dividend of 1½ per cent. from the profits of the shops has been declared.

Connecticut & Passumpsic Rivers.

This company owns a road from White River Junction, Vt., north to the Canada boundary at Derby Line, 110.3 miles. It leases the Massawippi road from Derby Line to Sherbrooke, P. Q., 34.7 miles, with branch to Stanstead, 2 miles, making 147 miles worked. The report is for the year ending June 30.

The company also owns the Newport & Richford road, 32 miles, but that road is worked by the Southeastern, of Canada, as part of its main line.

The equipment consists of 28 locomotives; 15 passenger and 12 baggage and mail cars; 520 box, 100 stock, 440 flat and 9 caboose cars; 2 boarding and 3 derrick cars.

The general account, condensed, is as follows:

Stock		$2,244,400.00
Bonds, 7 per cent		1,500,000.00
Newport & Richford bonds, 5 per cent		350,000.00
Notes payable		200,000.00
Sundry accounts		40,421.46
Reserve		249,549.96
Earnings		48,677.04
Total		$4,633,048.46
Construction	$3,516,525.29	
Newport & Richford Co	350,000.00	
Southeastern Ry	100,000.00	
Other stocks and property	62,603.18	
Notes and bills receivable	354,052.50	
Accounts and balances	8,765.54	
Steel rails, materials, etc	222,402.40	
Cash	18,699.55	
		4,633,048.46

Notes payable were reduced $50,000 during the year, and notes receivable were increased $18,000. There was no change in stock or bonds.

The traffic for the year was as follows:

Train-miles:	1881-82.	1880-81.	Increase.	P. c.
Passenger	296,037	275,039	20,998	7.6
Freight	249,522	223,729	25,793	11.4
Service	34,488	26,403	8,085	30.6
Total	580,047	525,171	54,876	10.5
Passengers carried	200,240	176,313	23,927	13.6
Passenger-miles	7,198,586	6,117,700	1,080,886	17.7
Tons freight carried	366,517	308,935	57,582	18.6
Ton-miles	22,589,950	19,726,662	2,863,288	14.5
Av train load:				
Passengers, No.	24	22	2	9.1
Freight, tons	91	88	3	3.4

Of the passengers carried last year 116,702 were local, and 83,528 to or from other roads. The increase in traffic was very considerable. That in freight has continued for several years.

The earnings for the year were as follows:

	1881-82.	1880-81.	Inc. or Dec.	P. c.
Freight	$478,447	$444,017	I. $34,430	7.8
Passengers	279,289	242,646	I. 36,643	15.1
Mail and express	29,329	28,412	I. 917	3.2
Rents and interest	64,684	59,072	I. 5,612	9.5
Total	$851,749	$774,147	I. $77,602	10.0
Expenses	547,904	462,982	I. 84,922	18.0
Net earnings	$303,845	$311,165	D. $7,320	2.4
Gross earnings per mile	5,794	5,266	I. 528	10.0
Net " "	2,067	2,117	D. 50	2.4
Per cent. of expenses	64.3	59.8	I. 4.5	

The increase in gross earnings from the increased traffic was large. The gain in two years has been very nearly $200,000. The expenses were increased by unusual renewals of rails, as mentioned below.

The income account is as follows:

Net earnings		$303,844.87
Surplus, June 30, 1881		57,252.52
Total		$361,097.39
Interest paid	$112,430.35	
Rental Massawippi road	48,000.00	
Interest Newport & Richford bonds	17,500.00	
Dividends, 6 per cent	134,490.00	
		312,420.35
Surplus, June 30, 1882		$48,677.04

The rental paid for the Massawippi road is the interest (6 per cent.) on $400,000 bonds, and the same dividends on the stock ($400,000) as are paid on the company's own stock. Interest is also paid on $350,000 Newport & Richford 5 per cent. bonds.

During the year 2,000 tons of steel rails and 71,789 new ties were laid, and 4,202 old rails repaired and relaid. There have been 3,100 tons of steel rails contracted for to be used during the current year. There are now 73 miles of track laid with steel. It has been decided to continue the application of surplus earnings to the purchase of steel rails until the whole road is relaid.

Two new combination cars were built, and the equipment generally kept in good condition. A new station is to be built at St. Johnsbury.

The increase of freight from the Southeastern road has made it necessary to enlarge the yard at Newport.

No accident of a serious nature occurred on the road during the year.

Cincinnati, Indianapolis, St. Louis & Chicago.

At the close of its last fiscal year, June 30, 1882, this company worked the following lines:

	Miles.
Main line, Cincinnati to LaFayette, Ind	173.53
Lawrenceburgh Branch	2.57
Cin., LaFayette & Chic. R. R., LaFayette to Kankakee, Ill.	75.50
Vernon, Greensburg & Rushville	44.39
Fairland, Franklin & Martinsville	38.30
Harrison Branch R. R.	7.40
Kankakee & Seneca	42.32
Total	384.01

The Vernon, Greensburg & Rushville was worked from July 1, 1881, and the Kankakee & Seneca from March, 1882. The company owns one-half interest in the Kankakee & Seneca, and a controlling interest in the other leased lines.

The equipment consists of 71 engines; 75 passenger train cars and 3,217 freight cars.

The general account is as follows:

Stock		$7,000,000.00
Bonds		7,488,650 00
Bills, accounts and balances		780,524.25
Profit and loss		318,493.96
Total		$15,587,668.21
Construction, etc.	$13,683,947.70	
Ver., Gr. & Rushv	113,648.25	
Kan. & Seneca	321,840.88	
Cin., L. & Chi	122,940.77	
Sundry securities	365,914.98	
Bills, accounts and balances	497,735.90	
Materials	144,128.20	
Cash	337,511.53	
		15,587,668.21

Stock was increased $3,000,000 during the year by the sale of new stock for cash. Of this $2,000,000 were offered and sold the previous year, but not issued until last year.

The bonded debt consists of $1,600,000 Indianapolis & Cincinnati bonds; $1,829,000 Cincinnati & Indiana bonds; $32,650 Cincinnati & Indiana funded coupons; $2,790,000 Indianapolis, Cincinnati & LaFayette bonds; $48,000 equipment bonds, and $1,188,000 bonds of the present company. The yearly interest charge is $511,845.50.

The traffic for the year was as follows:

Train miles:	1881-82.	1880-81.	Inc. or Dec.	P.c.
Passenger	764,781	684,431	I. 80,350	11.8
Freight	901,664	845,013	I. 56,651	6.7
Service and switching	611,602	468,138	I. 143,464	30.7
Total	2,278,047	1,997,582	I. 280,465	14.0
Car miles:				
Passenger train	3,228,252			
Freight	18,541,154			
Passengers carried	885,530	759,332	I. 124,198	16.4
Passenger miles	34,845,935	29,870,496	I. 4,975,439	16.7
Tons freight carried	1,201,319	1,255,984	D. 54,665	5.4
Ton miles	134,134,071	128,936,363	I. 5,197,708	4.0
Av. train load:				
Passengers No.	46	44	I. 2	4.5
Freight, tons	149	153	D. 4	2.6
Av. receipt:				
Per pass-mile	2.27 cts.	2.52 cts.	D. 0.15 ct.	4.9
Per ton-mile	1.18 cts.	1.21 cts.	D. 0.03 ct.	2.5

The cost of locomotive service last year was 16.44 cents per mile run. Of the freight car mileage 19.1 per cent. was of empty cars.

The earnings for the year were as follows:

	1881-82.	1880-81.	Inc. or Dec.	P.c.
Passengers	$787,690	$689,469	I. $98,221	14.2
Freight	1,534,005	1,509,442	I. 24,563	1.6
Mail and express	142,002	129,098	I. 12,904	10.0
Rents, etc	62,294	37,049	I. 25,245	68.2
Total	$2,525,991	$2,365,058	I. $160,933	6.8
Expenses	1,525,387	1,403,569	I. 121,818	8.7
Net earnings	$1,000,604	$961,489	I. $39,115	4.0
Gross earn. per mile	7,099	8,298	D. 1,199	14.4
Net earn. per mile	2,812	3,374	D. 562	16.6
Per cent. of exps	60.38	59.35	I. 1.03	

Expenses include taxes, which were $44,908.82 last year, and $37,925.46 in the previous year. The passenger earnings show a large increase; the increase in freight earnings would have been much greater had it not been for a general decrease in rates on through freight.

The income account was as follows:

Net earnings		$1,000,604.03
Interest and rents	$589,057.75	
Dividends, 6 per cent	360,000.00	
		958,057.75
Surplus for the year		$42,546.28
Balance, June 30, 1881		595,867.11
Payments on account of new stock		1,314,508.43
Sale of real estate		97,264.17
Increase of debt and decrease of assets		22,102.77
Total		$2,072,488 76
Construction and equipment	$386,058.28	
Old claims	119,912.38	
Sinking funds	11,150.00	
Advances for construction on leased lines	497,293.98	
Terminal improvements, Cincinnati	244,194.20	
Securities of connecting lines	70,653.15	
Increase in supplies	79,542.78	
		1,408,804.77
Balance, June 30, 1882		$663,583.99

Of this balance the sum of $337,511.53 is in cash, and $326,072.46 in bills and accounts receivable.

The road from Cincinnati to Kankakee is now all laid with steel. Extensive improvements are in progress in the passenger and freight stations in Cincinnati. The road for nearly 20 miles along Tanner's Creek is being almost entirely rebuilt.

The report says: "The Treasurer, at the close of the year, has sufficient cash on hand and due him to pay all floating debts and pay the estimated cost of finishing the grain elevator and passenger station. Out of the income for the past year, all interest charges have been paid, rentals and taxes, 6 per cent. dividends upon the capital stock, $11,000 of the company's bonds bought and canceled for the sinking fund and the balance carried forward.

"The various lines operated by this company are leased on the following terms:

"The Cincinnati, LaFayette & Chicago Railroad, from LaFayette to Kankakee, under an arrangement to pay its fixed charges. This company, owning all the second mortgage bonds, and substantially all of the preferred stock, it has had to pay interest upon only $1,120,000 7 per cent. bonds, and 6 per cent. upon one-half of the cost of the road between LaFayette and Templeton, leased of the Lake Erie & Western Railroad. The gross earnings and expenses have been included each month in the statements of the Cincinnati, Indianapolis, St. Louis & Chicago Railway Company, and the fixed charges are included by the Treasurer in the payments by this company. This road is a valuable property, and has well justified the large investments made in its securities by the company.

"The condition of this property has been greatly improved during the past year. The laying of the entire line with steel rail has been completed; new round-house and turntable have been built at Kankakee; new bridges at Aroma and Iroquois; a new station-house at Donovan, and a large amount of siding added. A portion of this expense, amounting to $85,993.56, has been charged to construction of that company. The balance has been included in expenses.

"The Fairland, Franklin & Martinsville Railroad has been operated by this company under a temporary agreement to pay its taxes, and keep the property in repair. Our company owns substantially all of the capital stock. There are no bonds. The road is self-supporting, and a good feeder. Its earnings and expenses each month have been included in those of the main line. It is through a good country, that is improving each year. An immense wheat crop, already harvested, assures a good traffic for the current year.

"The Harrison Branch Railroad has been operated under a temporary lease of 7 per cent. upon its capital stock of $200,000, or $14,000 per annum. This amount has first been deducted from its gross earnings, and the balance carried into the earnings of our company. The expenses have been included each month in those of the main line. Of the $200,000 of stock of this company, the C., I., St. L. & C. owns $126,600, so that $8,862 is a credit to its net receipts. The road just about earns its way, allowing is a strict *pro rata* on the traffic with this company, without charging it any terminal.

"On July 1, 1881, an agreement was entered into to operate the Vernon, Greensburg & Rushville Railroad for five years, and pay its fixed interest and carry the debt due this company. The road was new, and it has cost largely to keep it in order. In the Treasurer's statements, he has deducted the interest charges, $31,500 per year, or $2,625 per month, from the gross earnings, and added the balance to the earnings of this company, while the expenses have been included each month in those of the main line. It is doubtful if the road has paid, during the year just ended, anything like what it has cost this company to operate, but it is today in much better condition than one year ago. It has fine crops, and is developing a large local business. It has enabled our company to control a large traffic to and from Louisville that has hitherto been inaccessible; also, to Fort Wayne and the North. As will be seen by reference to the Superintendent's report, 14,183 loaded cars have been moved during the year upon this division. Undoubtedly the line the coming year will be self-supporting, besides furnishing a large traffic to the main line. At the expiration of the lease, the debt due this company should be good. The road is well located, and, in connection with the Ohio & Mississippi Railroad, makes a fine line between Louisville, Indianapolis, Chicago and the West. The northern part, from Greensburg, gives this company a good line from Cincinnati to Fort Wayne and the North.

"The Kankakee & Seneca Railroad, which was just commenced at date of last report, was opened for traffic in March last. The construction train, however, was not taken off until August of this year. This company advanced one-half the cost of the road (42 miles in length), $325,000, and agreed to operate it, keeping an account of earnings and expenses. So far, it has earned its expenses, but no profit. This, however, is doing exceedingly well for a new road. It is one of the best built new roads in the West, through a fertile country, with good connections with the Illinois Central, the Wabash, St. Louis & Pacific, the Chicago & Alton, the Chicago, Pekin & Southwestern Railroad and the Chicago, Rock Island & Pacific, and in time will prove a valuable feeder to this company, as well as a source of income from the investment. * * * *

"Our relations during the year with connecting lines have been harmonious. The pool on business between Cincinnati and Chicago has been maintained, and, although not complete in all respects, has served undoubtedly to secure better rates for both parties.

"The pool between Cincinnati and Indianapolis is not satisfactory. This company is not receiving the share of business it is entitled to. Various attempts have been made for the last three years to secure a proper adjustment, which have failed on account of the temporary management of the Cincinnati, Hamilton & Dayton Company. It has now fallen into permanent hands, and we hope to secure such modifications of the contract as will make it equitable to the company, and at the same time secure fair and remunerative rates. Failing in this, it will be better for our company to terminate the contract rather than continue the present arrangement. * * * *

"The charges for the current year will be as follows: Interest upon bonded debt of Cincinnati, Indianapolis, St. Louis & Chicago Railway, $511,845.50; do. Cincinnati, LaFayette & Chicago Railway, $78,400; do. Vernon, Greensburg & Rushville Railway, $31,500; Harrison Branch, $5,138; taxes (estimated) $45,000; dividends on $7,000,000 of stock at 6 per cent., $420,000. Total, $1,091,883.50.

"This is the entire charge upon all the company's lines, not including interest on securities owned by this company."

Cairo & St. Louis.

This road is of 3 ft. gauge, and extends from Cairo, Ill., to East Carondelet, 146 miles: its trains run over leased tracks from East Carondelet to East St. Louis, 5.6 miles, making 151.6 miles in all.

The following statements are from the report of the Receiver for the year 1881. Since the report was made the road has been turned over to the St. Louis & Cairo Company, composed of purchasing bondholders.

The equipment consists of 22 engines; 9 passenger, 2 combination and 3 baggage, mail and express cars; 131 box, 2 fruit, 8 stock, 509 coal, 50 coke and 90 flat cars; 10 service cars, 41 hand cars and 30 push cars.

The Receiver's balance sheet is as follows:

Receiver's certificates		$284,407.18
Floating liabilities		208,203.57
Balance of income account		14,012.72
Total		$506,623.47
Expenditures on capital account	$434,803.93	
Floating assets	63,863.14	
Suspense account	7,956.40	
		406,623.47

The expenditures for capital account under the Receivership were for purchase of equipment, improvement of depot grounds, payment for lands and right of way and similar purposes.

The traffic for the year was as follows:

Train miles:	1881.	1880.	Inc. or Dec.	P. c.
Passenger	134,522	130,959	I. 3,563	2.7
Freight	299,423	313,926	D. 14,503	4.6
Service	20,660	23,277	D. 2,617	11.2
Total	454,605	468,162	D. 13,557	2.9
Car-miles:				
Pass.-train	360,436	363,641	I. 26,795	7.4
Freight	4,323,119	4,474,142	D. 151,023	3.4
Passengers carried	111,548	91,445	I. 20,103	22.0
Passenger miles	2,250,803	1,871,426	I. 419,382	22.4
Tons freight carried	295,643	255,862	I. 39,781	15.5
Ton miles	17,454,708	16,193,825	I. 1,260,883	7.7
Av. receipt:				
Per pass.-mile	3.643 cts.	4.135 cts.	D. 0.492 ct.	11.9
Per ton-mile	1.850 cts.	1.969 cts.	D. 0.119 ct.	6.0

The average cost of locomotive service was 18.71 cents per mile. Of the freight car mileage last year 56.4 per cent. was of loaded cars. The average earnings per revenue train mile were 97.8 cents; net earnings, 16.9 cents.

The earnings for the year were as follows:

	1881.	1880.	Inc. or Dec.	P. c.
Passengers	$83,475	$77,374	I. $6,101	8.0
Freight	322,866	318,851	I. 4,015	1.2
Other	18,140	17,462	I. 678	3.8
Total	$424,481	$413,687	I. $10,794	2.7
Expenses	351,139	331,574	I. 19,565	5.9
Net earnings	$73,342	$82,113	D. $8,771	10.7
Gross earn. per mile	2,800	2,817	D. 17	0.8
Net earn. per mile	484	567	D. 83	14.6
Per cent. of expenses	82.5	80.1	I. 2.4	

The mileage in the report is computed at 151.6 miles in 1881, and 146.5 miles in 1880, the line leased into East St. Louis being included last year.

The income account was as follows:

Net earnings		$73,342.09
Interest, steel rails, etc	$51,814.10	
Construction and equipment	17,651.12	
Old claims settled	21,745.45	
		91,210.67
Excess of payments		$17,868.58
Balance, Dec. 31, 1880		31,881.30
Balance on hand, Dec. 31, 1881		$14,012.72

During the year such improvements as were possible have been made in track, bridges and buildings. Lands previously occupied at several points were paid for and clear title secured.

Two new passenger engines and six consolidation freight engines were bought. Eight of the old light engines were sold at fair prices.

Some changes and loss of business were caused by sale of coal lands and by the building of new lines to mines heretofore served by this road.

The greatest loss to the road was caused by damages done and interruption of business by high water at different points on the line.